# Automated Lubrication System

## Installation/Operator Instructions

# Caterpillar Medium Sized Wheel Loader – Cat 980G

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## Introduction

Thank you for purchasing the Quicklub® On Board Grease System for your Caterpillar medium sized wheel loader. The system has been designed to increase the component life and overall productivity of your equipment, while reducing labor costs related to the traditional method of point-by-point manual lubrication.

The system consists of the Quicklub® progressive metering valves that positively displace and meter precise amounts up to N.L.G.I. #2 shop grease down to -13°F temperature. Grease is distributed to each connected point through high-pressure tube and hose.

This Quicklub® kit is designed to work with your wheel loader. This is a fully automated lubrication system utilizing a 12 volt DC heavy duty electric pump with integrated timer that dispenses lubricant to the progressive metering valves at timed intervals. The lubricant is pumped to the primary metering valve, which distributes it to secondary metering valves in specific zones of service. The secondary metering valves deliver measured amounts of lubricant proportional to each lube point in its zone.

The components are connected with lengths of high-pressure hose and that are included in the kit. Contents of the kit are specifically marked to coincide with this instruction manual to achieve a consistent and quality installation.

This manual has been included with the system as an easy-to-follow guide for installation and operation. Keep it with the equipment, as it is also a trouble-shooting manual to keep your automated lubrication system working properly.

This kit also contains Installation and Operation Instructions for the 203 series system supply pump. Please refer to this manual for detailed information on operations, maintenance, trouble shooting, and technical data. If missing, please contact Lincoln and request service page. Durable and reliable, the Quicklub® On Board Grease System has been carefully designed using industry proven products to provide long and trouble-free life under the most severe conditions.

For further information on this system please contact Lincoln Technical Services at 1-314-679-4200 ext. 4782# or fax 1-314-679-4357.

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## Preparation/Installation Overview

The following steps will assist the installer with a systematic approach for installing the Quicklub Automated lube system on the wheel loader. By following the steps outlined, a successful installation will be achieved and will increase the service life of all pins and bearings connected to the lube system.

**Preparation**

- Compare the bill of material with the kit contents
- Clean machine thoroughly
- Survey the equipment and locate all lubrication points to be serviced by the lubrication system
- Lubricate each point with a grease gun prior to removing grease fittings to assure grease acceptance. Any points that will not accept grease must be repaired prior to system installation.
- After confirming all points will accept grease, remove all grease fittings

**Installation Overview**

- Install appropriate adapters and tube fittings in lube points.
- Position valve mounting brackets on machine.
- Attach metering valves to previously mounted brackets.
- Use tubing cutters, cut to length individual tubing feed lines from secondary valves to lube points and make connections.
- When installing feed line tubing into the Quicklinc fittings, push until firmly seated.
- Neatly bundle, loom with spiral wrap provided and tie strap feed lines wherever possible to protect from abrasion.
- Size, cut and attach appropriate hose ends to all supply lines. The high-pressure hose is used as supply lines from the pump to the primary valve, the primary to the secondary valves. It is recommended that the supply lines be routed and cut only after all valves and the electric pump have been attached to the machine. This assures the supply line is cut to the proper length. Also, allow for unrestricted movement while the machine is in motion.
- Route supply lines from the pump to primary valve and from the primary valve to the secondary valve and make connections.
- Secure supply/feed lines with tie straps, so not in harms way.
- Mount pump and make electrical connections (electrical diagram included with the pump).

# Bill of Materials

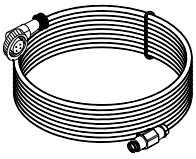
| Part Number | Description | Qty | U/M |
|---|---|---|---|
| 5045 | Zerk Fitting | 4 | EA |
| 5527 | 1/4-28 Grease fitting | 1 | EA |
| 10181 | 1/8" NPT Adapter | 2 | EA |
| 10461 | Reducing bushing | 1 | EA |
| 13129 | 1/8" NPT 90 degree adapter | 4 | EA |
| 14054 | Bulkhead connector | 1 | EA |
| 14562 | Two Station Anchor Block | 2 | EA |
| 14570 | One Station Anchor Block | 2 | EA |
| 20028 | 1/8" NPT 45 degree adapter | 14 | EA |
| 20029 | 1/8" NPT 90 degree adapter | 8 | EA |
| 20031 | 1/8" NPT 90 degree adapter (short) | 5 | EA |
| 51055 | Lock Nut for bulkhead connector | 1 | EA |
| 66872 | Self tapping screw | 4 | EA |
| 67448 | Street Tee | 4 | EA |
| 94822 * | 8 Liter 203 style pump (Monitored) | 1 | EA |
| 94824 | 8 Liter 203 style pump (Non-Monitored) | 1 | EA |
| 644-40827-1 ** | 8 Liter 203 style pump (Data Logger) | 1 | EA |
| 241054 | Nylon Ties | 1 | EA |
| 241110 | Spiral Wrap | 14 | EA |
| 241288 | 1/8" Hose - 40 ft.coil | 4 | EA |
| 241289 | swedge hose end | 2 | EA |
| 241484 * ** | Reset Switch | 1 | EA |
| 242125 | Grease Cap | 4 | EA |
| 246002 | Reusable Hose Coupling | 44 | EA |
| 249209 | 12 mm bolts x 1.574" | 2 | EA |
| 249520 | Pump Mounting Bracket | 1 | EA |
| 249848 | 12 mm bolts x 3/4" | 36 | EA |
| 249850 | 12mm standoffs | 36 | EA |
| 249853 | "P" style clamps 0.812" dia | 8 | EA |
| 249913 | "P" style clamps 0.375" dia | 26 | EA |
| 249987 | 6mm valve mounting bolts | 8 | EA |
| 252807 | Valve Mounting Block | 4 | EA |
| 270864 ** | PSI relief valve | 1 | EA |
| 270931 | "P" style clamps 0.750" dia | 7 | EA |
| 272394 | Hose stud assembly - 90 degree | 6 | EA |
| 272401 | Hose stud | 24 | EA |
| 272427 | Quicklinc Sleeve | 30 | EA |
| 272598 | Spring Coil | 1 | EA |
| 272658 | Quicklinc Valve Outlet fitting with Check | 30 | EA |
| 234-13188-3 * ** | Piston Detector | 1 | EA |
| 303-16118-1 | Metering Adjustment Screw - 0.0049 cu in | 1 | EA |
| 303-16119-1 | Metering Adjustment Screw - 0.0085 cu in | 2 | EA |
| 303-16120-1 | Metering Adjustment Screw - 0.012 cu in | 6 | EA |
| 303-16121-1 | Metering Adjustment Screw - 0.018 cu in | 1 | EA |
| 303-16122-1 | Metering Adjustment Screw - 0.024 cu in | 4 | EA |
| 303-16124-1 | Metering Adjustment Screw - 0.049 cu in | 1 | EA |
| 303-16126-1 | Metering Adjustment Screw - 0.085 cu in | 2 | EA |
| 303-17499-3 | Closure Plug | 4 | EA |
| 432-24313-1 | Quicklinc Protective caps | 33 | EA |
| 649-29547-1 | SSV-D Divider Valve 10 outlet w/CIP | 1 | EA |
| 649-29548-1 | SSV-D Divider Valve 12 outlet w/CIP | 1 | EA |
| 649-29550-1 | SSV-D Divider Valve 6 outlet w/CIP (1&2 singled) | 2 | EA |

* Monitored Pump only

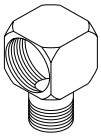
** Data Logger Pump only

# QUICKLUB COMPONENT GLOSSARY

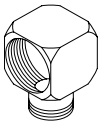
PART NUMBER (LINCOLN) and DESCRIPTION



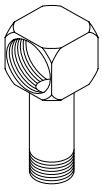
234-13188-3 - 7-Meter Proximity Switch...



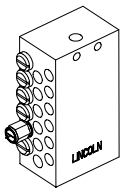
20029 - 1/8" NPT 90\U+00B0 Adapter



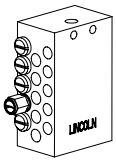
20031 - 1/8" NPT 90\U+00B0 Adapter...



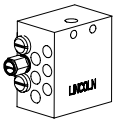
13129 - 1/8" NPT 90\U+00B0 Adapter




649-29548-1 -SSV-D Divider Block SSV-12 with Indicator Pin...

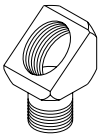
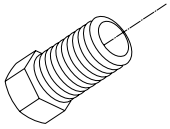
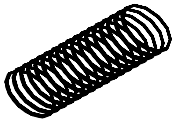
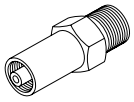
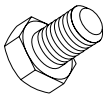
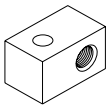
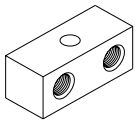



649-29547-1 -SSV-D Divider Block SSV-10 with Indicator Pin...




649-29550-1 -SSV-D Divider Block SSV-6 with Indicator Pin (1 & 2 Single)...

# QUICKLUB COMPONENT GLOSSARY

| | PART NUMBER (LINCOLN) and DESCRIPTION | |
|---|---|---|
|  | 20028 | - 1/8" NPT 45 Adapter... |
|  | 10461 | - Reducer Bushing... |
|  | 272598 | -Spring coil (25 Feet)... |
| | 432-24313-1 | -Protecting Cap for Push-in Type Fitting... |
| | 241484 | -Push Button Light Kit... |
| | 249850 | - 12mm Stand-off... |
|  | 241289 | - 1/8" NPT Swedge on hose stud... |
|  | 249848 | - Grade 8 -12mm Mounting bracket bolt... |
|  | 14570 | - One Station anchor block (junction block)... |
|  | 14562 | - Two Station anchor block (junction block)... |

# QUICKLUB COMPONENT GLOSSARY

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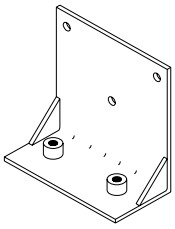
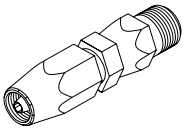
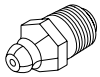


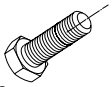
249520 - Mounting bracket assembly...



246002 - 1/8" NPT field installable hose coupling...

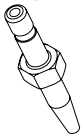


5045 - Straight leak-proof grease fitting...



249209 - Grade 8 - 12mm Mounting bracket bolt...

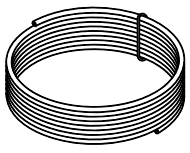
272394 - Hose stud, 90°...



272401 - Hose stud, straight...

272427 - Threaded sleeve...

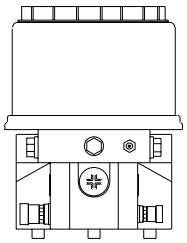
272658 - Valve outlet fitting...



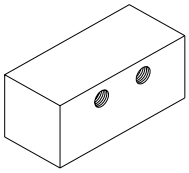
241288 - 1/8" Grease filled high pressure hose (40 ft. coil)...

# QUICKLUB COMPONENT GLOSSARY

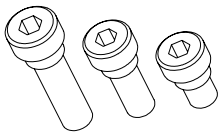
PART NUMBER (LINCOLN) and DESCRIPTION



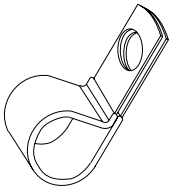
94822 - 203 8 Liter Pump, 24 Volt / 2 Amp Monitored
94824 - 203 8 Liter Pump, 24 Volt / 2 Amp Non-Monitored
644-40827-1 - 203 8 Liter Pump, 24 Volt / 2 Amp Data Logger



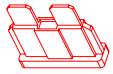
252807 - Divider valve mounting block...



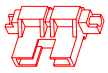
303-16118-1 -Metering Adjustment Screw (.0049 cu in)...
303-16119-1 -Metering Adjustment Screw (.0085 cu in)...
303-16120-1 -Metering Adjustment Screw (.012 cu in)...
303-16121-1 -Metering Adjustment Screw (.018 cu in)...
303-16122-1 -Metering Adjustment Screw (.024 cu in)...
303-16124-1 -Metering Adjustment Screw (.049 cu in)...
303-16126-1 -Metering Adjustment Screw (.085 cu in)...



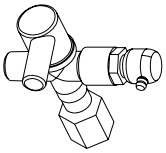
249913 - .375 P-style clamp for 12mm bolt...
270931 - .750 P-style clamp for 12mm bolt...
249853 - .812 P-style clamp for 12mm bolt...



241052 - Fuse 8 AMP.



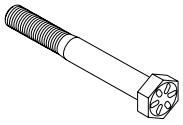
241053 - 8 AMP fuse holder...



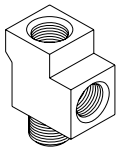
270864 - Standard Pressure Relief Valve...

# QUICKLUB COMPONENT GLOSSARY

PART NUMBER (LINCOLN) and DESCRIPTION

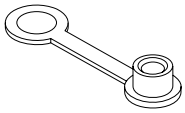


249987 - Grade 8 - 6mm valve mounting bolt...

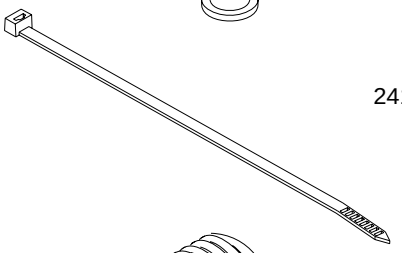


67448 - Male run tee...

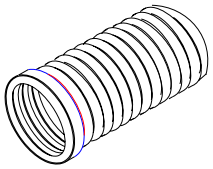
303-17499-3 - Valve closure plug for Black divider valves...



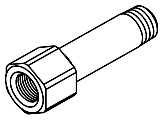
242125 - Plastic Grease fitting cap...



241054 - Nylon Ties (100 count poly bag) 7" Length...



241110 - Feed Line Bundling Spiral Wrap (10ft.) ...



10181 - 1/8" Straight adapter.

66872 - Self Tapping Screw...

## System Operation

**The key components of the Quicklub system are:**

1. **Pump** with **Integrated Timer**
2. Divider valve network consisting of a Primary Valve and Secondary Valves with attached **Cycle Indicator Pin**.

3. A lubrication event is initiated by actuating the pump via the **Integrated Timer** based on a preset “pause time” or time between lubrication events.
4. The **Pump** dispenses lubricant to the primary divider valve

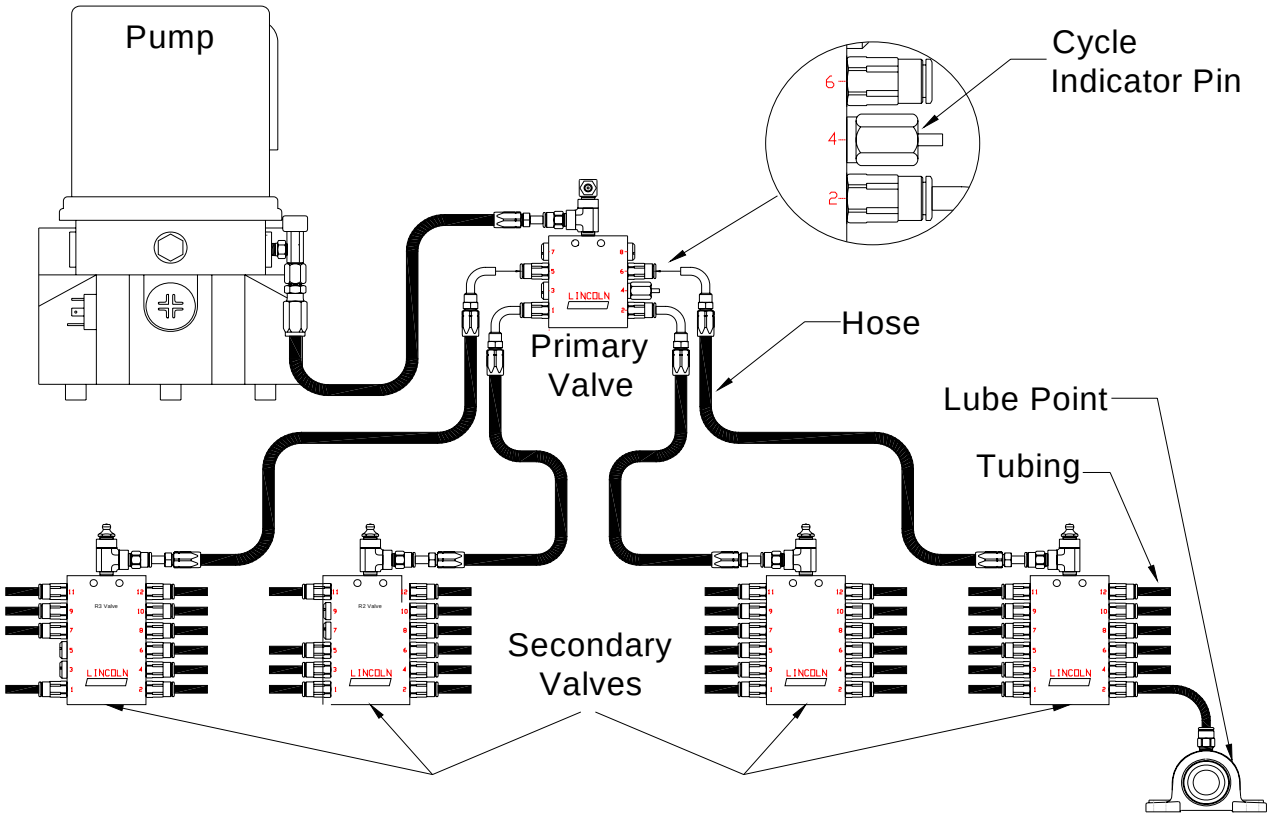
5. The **Primary Valve** distributes the lubricant to the secondary valves

6. The **Secondary Valves** distribute and dispense lubricant to the lubrication points.

7. Lubricant flow through the divider valves actuates the **Cycle Indicator Pin** for a visual inspection pf proper operation.

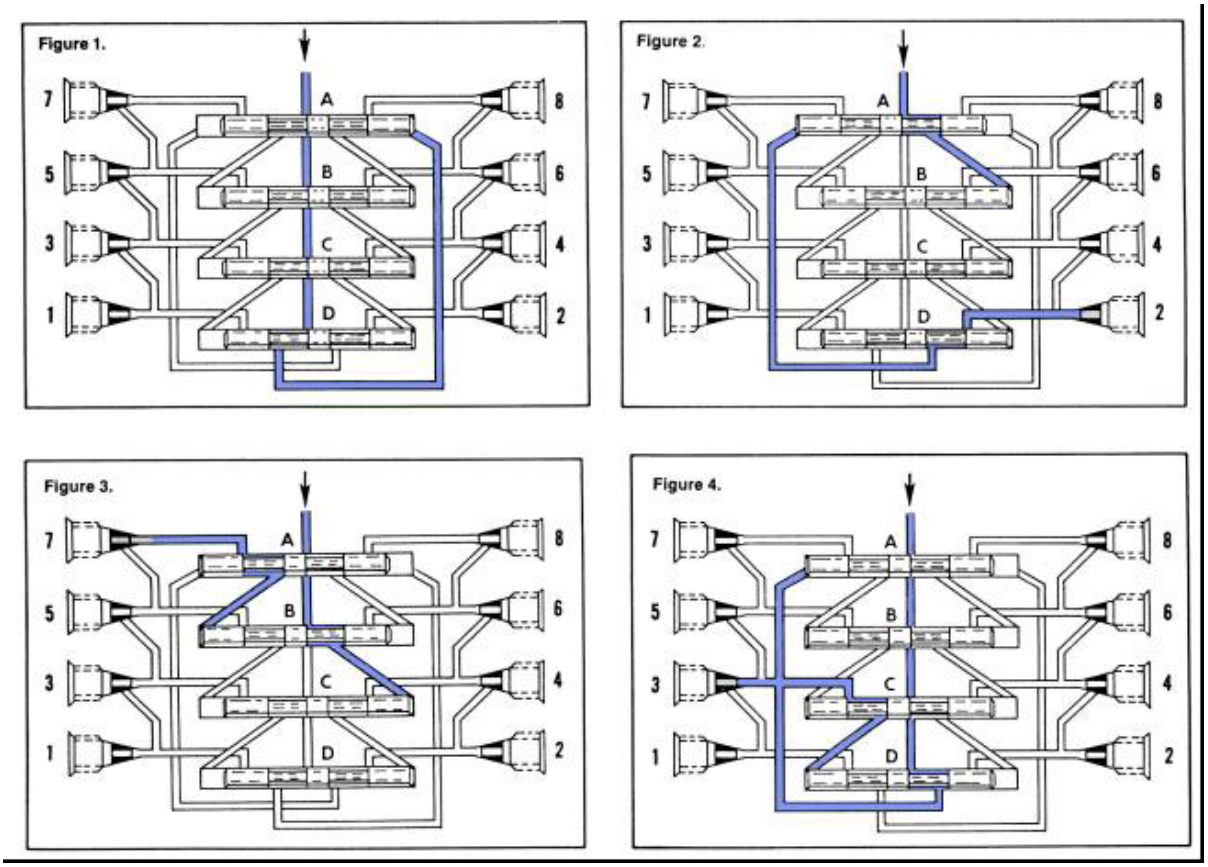
The pump will run for the preset On-Time

8. The controller now begins countdown for the next lubrication event.



## Divider Valve Operation

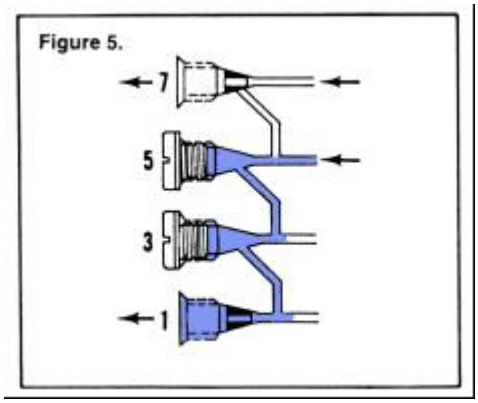
At the heart of every Quicklub System is the metering valve or progressive distributor block, designed to positively meter the input of lubricant (oil up to NLGI #2 greases) out to the connected number of lubrication points irrespective of distance and back pressure. The inlet passageway is connected to all piston chambers at all times with only one piston free to move at any one time.



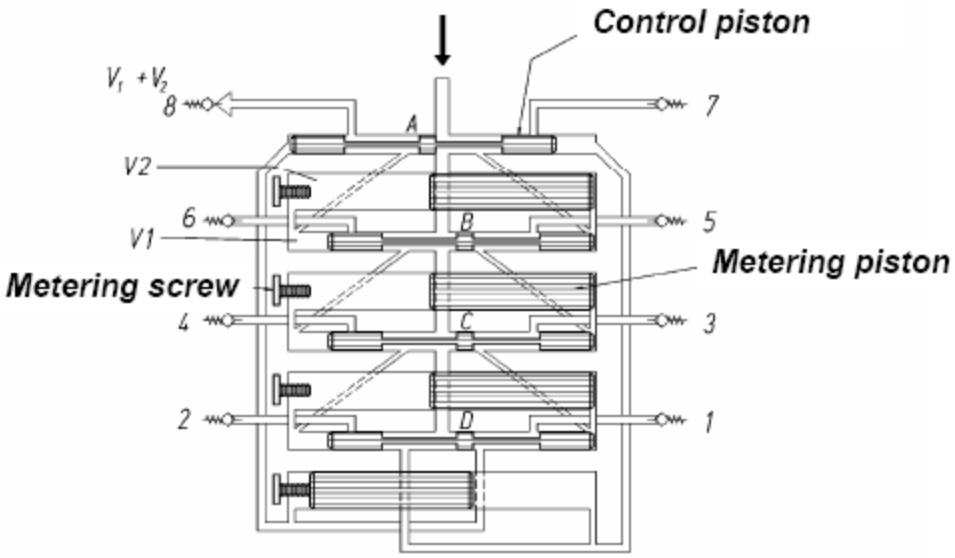

- With all pistons at the far right, lubricant from the inlet flows against the right end of piston A (fig. 1).
- Lubricant flow shifts piston A from right to left, dispensing piston A output through connecting passages to outlet 2. Piston A shift directs flow against right side of piston B (fig. 2).
- Lubricant flow shifts piston B from right to left, dispensing piston B output through valve ports of piston A and through outlet 7 (fig. 3).
- Lubricant flow shifts piston C from right to left dispensing piston C output through valve ports of piston B and through outlet 5.
- Piston C shift directs lubricant flow against right side of piston D (not illus.)
- Lubricant flow shifts piston D from right to left, dispensing piston D output through valve ports of piston C and through outlet 3.
- Piston D shift directs lubricant through connecting passage to the left side of piston A (fig. 4).
- Lubricant flow against left side of piston A begins the second half cycle which shifts pistons from left to right, dispensing lubricant through outlets 1, 8, 6 and 4 of the divider valve.

**Cross-porting (Divider Valve)**
Installing a closure plug in one or more outlets may combine outputs from adjacent outlets. Lubricant from a plugged outlet is redirected to the next adjacent outlet in descending numerical order. **Outlets 1 and 2 must not be plugged since they have no cross-port passage to the next adjacent outlet (SSV valves only).**

In figure 5 outlets 5 and 3 are cross-ported and directed through outlet 1. In this example, outlet 1 will dispense three times as much lubricant as outlet 7. The tube ferrules in outlets 1 and 7 block the cross-port passage so that lubricant flow is directed through the outlets.



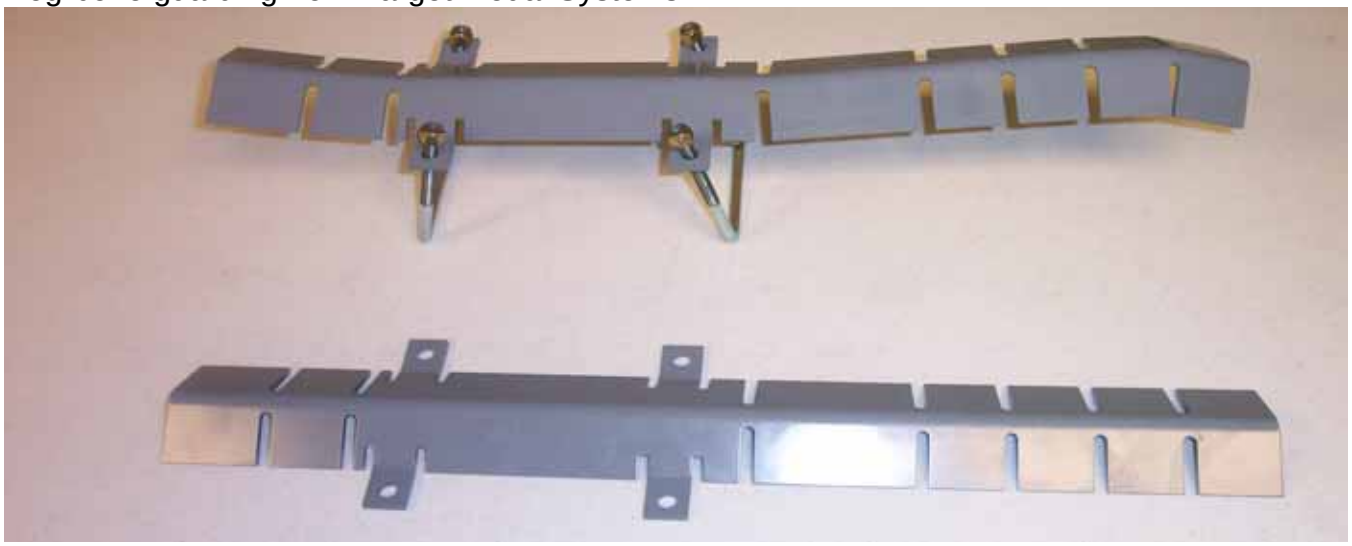

**SSV-D Divider Valves**
Lubricant quantities can also be altered using the SSV-D divider valves. SSV-D divider valves are adjustable per outlet pair, thus enabling lubricant requirements to be better met. The metering occurs within the block via metering screws that are available in ten different outputs. The outputs of the divider valve can be easily set, even after installation by changing the metering screw. A metering adjustment screw chart is included toward the end of this manual.



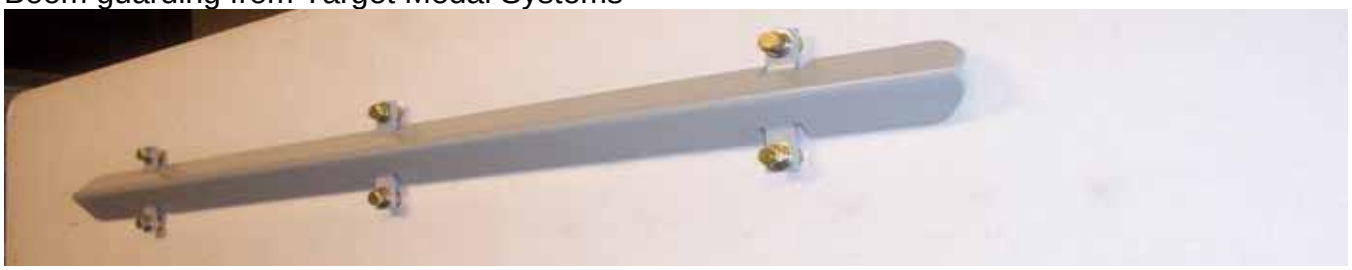
## Guarding

The dog-bone and boom guarding used in this manual are from Target Medal Systems. Guarding can also be fabricated using angle iron or c-channel for the high impact zones.

Dog-bone guarding from Target Medal Systems

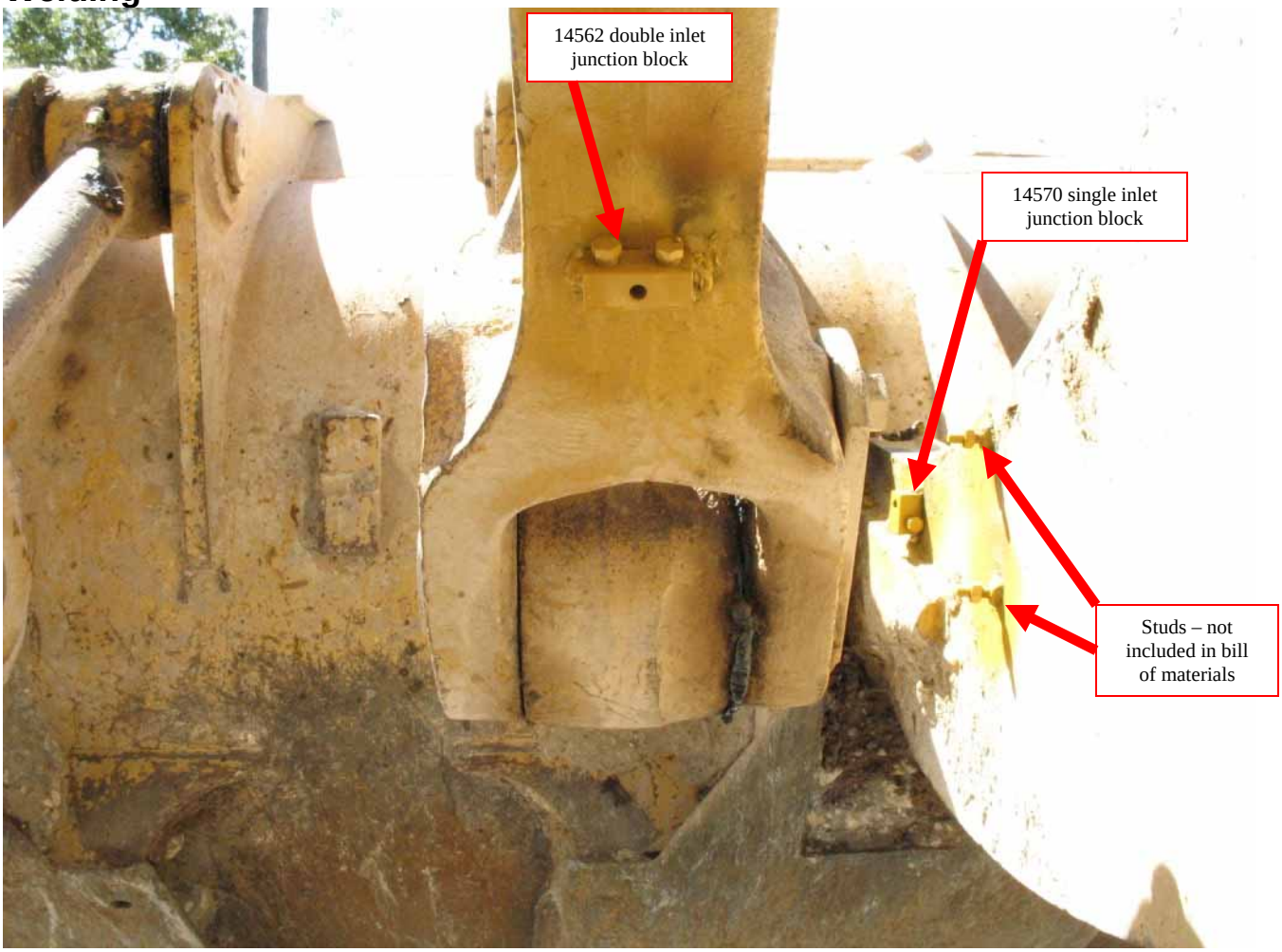


Boom guarding from Target Medal Systems

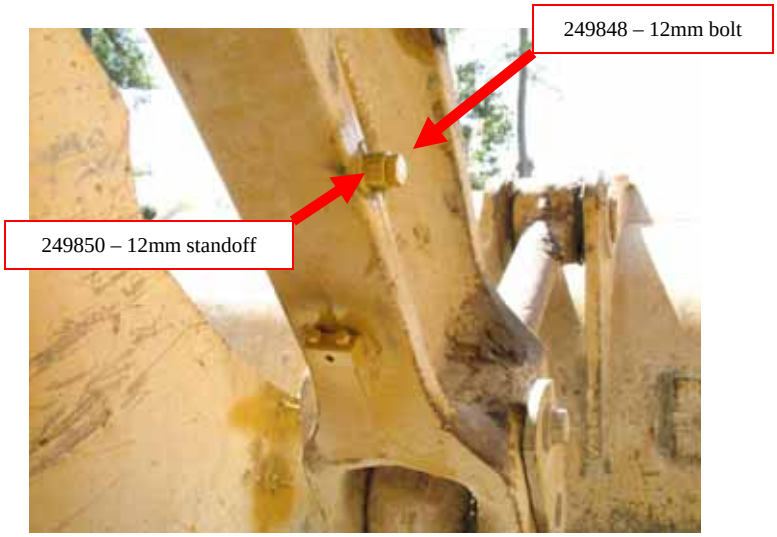


It is recommended that all lines be protected with spiral wrap for protection.
Various sizes of nylon protective sleeving can be found at a Parker distributor (see below).

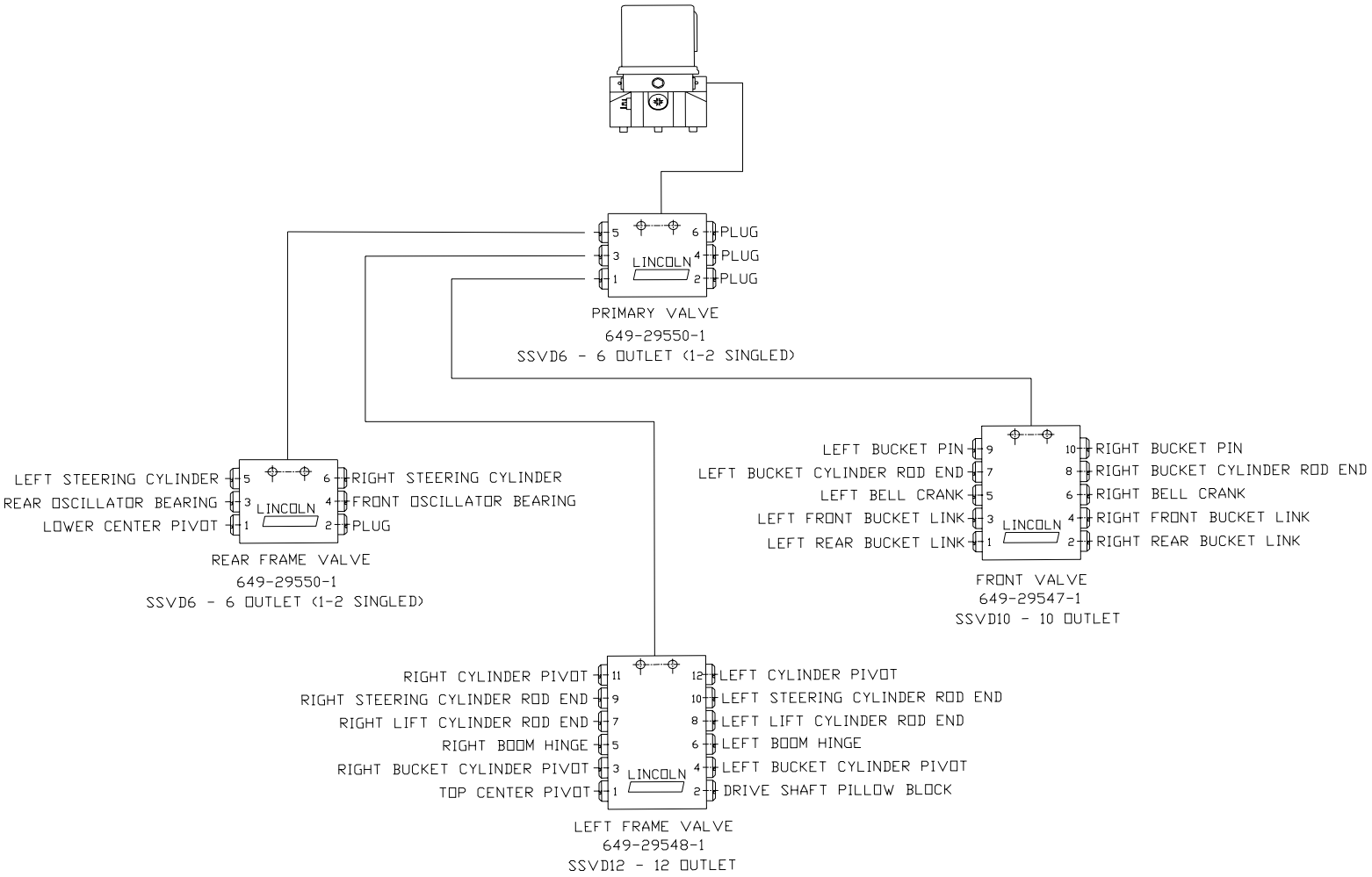
## Welding




All welding should be completed prior to beginning the line routing. Component locations can be found throughout this installation manual. Note: Ensure that the battery is disconnected prior to welding.



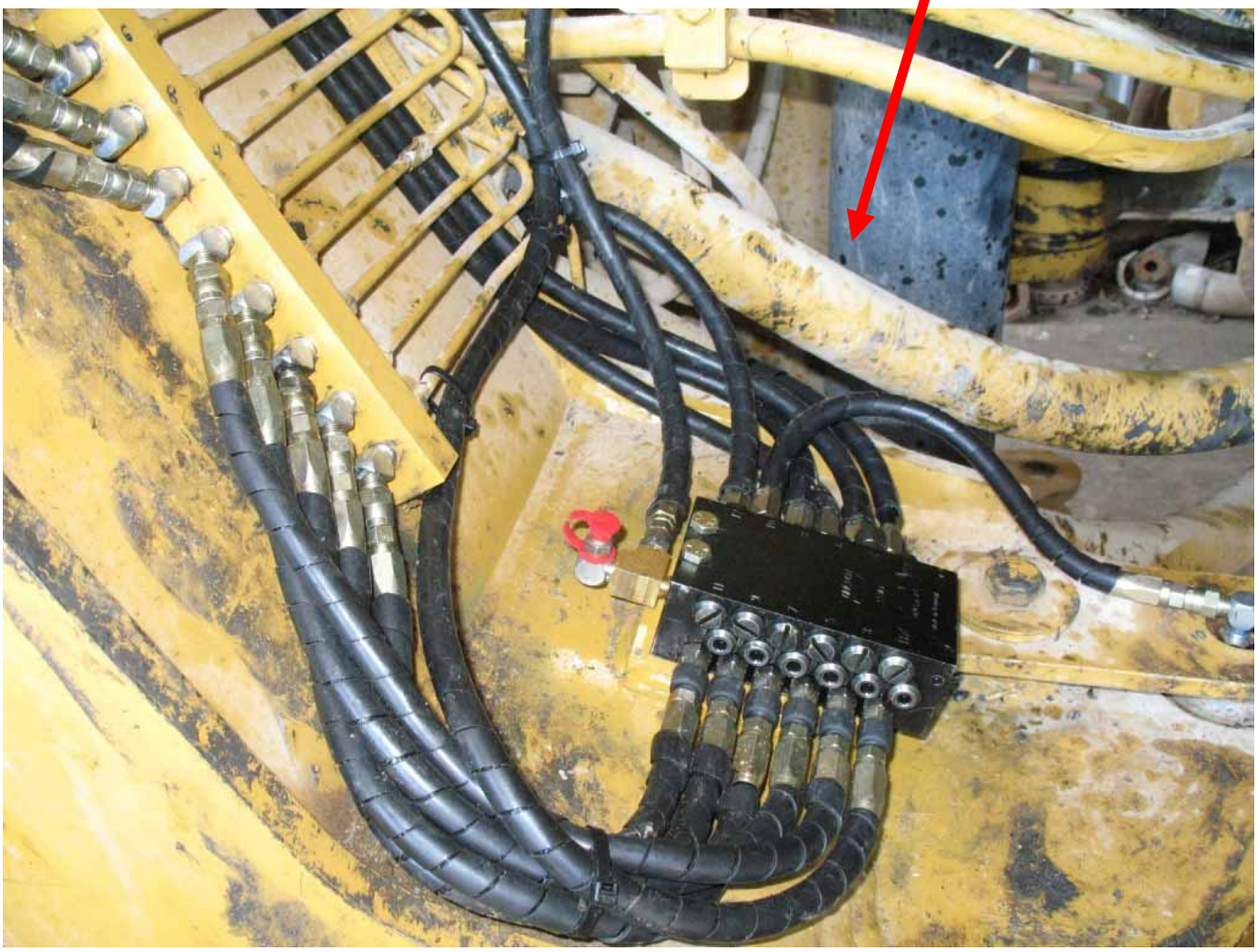
## System Schematic


PRIMARY VALVE
649-29550-1
SSVD6 - 6 OUTLET (1-2 SINGLED)
5 6 PLUG
3 4 PLUG
1 2 PLUG
LINCOLN
REAR FRAME VALVE
649-29550-1
SSVD6 - 6 OUTLET (1-2 SINGLED)
LEFT STEERING CYLINDER 5 6 RIGHT STEERING CYLINDER
REAR OSCILLATOR BEARING 3 4 FRONT OSCILLATOR BEARING
LOWER CENTER PIVOT 1 2 PLUG
FRONT VALVE
649-29547-1
SSVD10 - 10 OUTLET
LEFT BUCKET PIN 9 10 RIGHT BUCKET PIN
LEFT BUCKET CYLINDER ROD END 7 8 RIGHT BUCKET CYLINDER ROD END
LEFT BELL CRANK 5 6 RIGHT BELL CRANK
LEFT FRONT BUCKET LINK 3 4 RIGHT FRONT BUCKET LINK
LEFT REAR BUCKET LINK 1 2 RIGHT REAR BUCKET LINK
LEFT FRAME VALVE
649-29548-1
SSVD12 - 12 OUTLET
RIGHT CYLINDER PIVOT 11 12 LEFT CYLINDER PIVOT
RIGHT STEERING CYLINDER ROD END 9 10 LEFT STEERING CYLINDER ROD END
RIGHT LIFT CYLINDER ROD END 7 8 LEFT LIFT CYLINDER ROD END
RIGHT BOOM HINGE 5 6 LEFT BOOM HINGE
RIGHT BUCKET CYLINDER PIVOT 3 4 LEFT BUCKET CYLINDER PIVOT
TOP CENTER PIVOT 1 2 DRIVE SHAFT PILLOW BLOCK

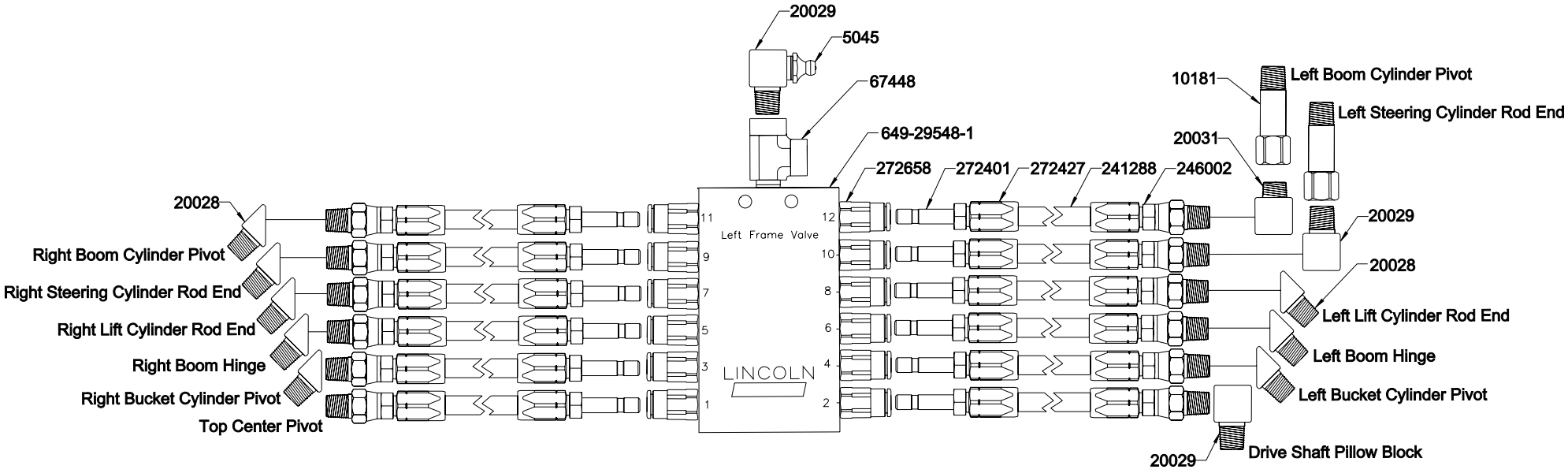
## Installation Details

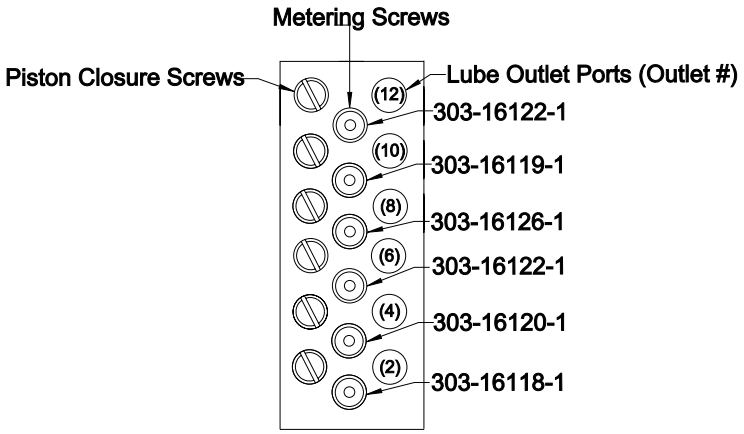
Left Frame Valve

Mount the left frame valve below the 8 outlet remote manifold block on the left hand side of the machine.

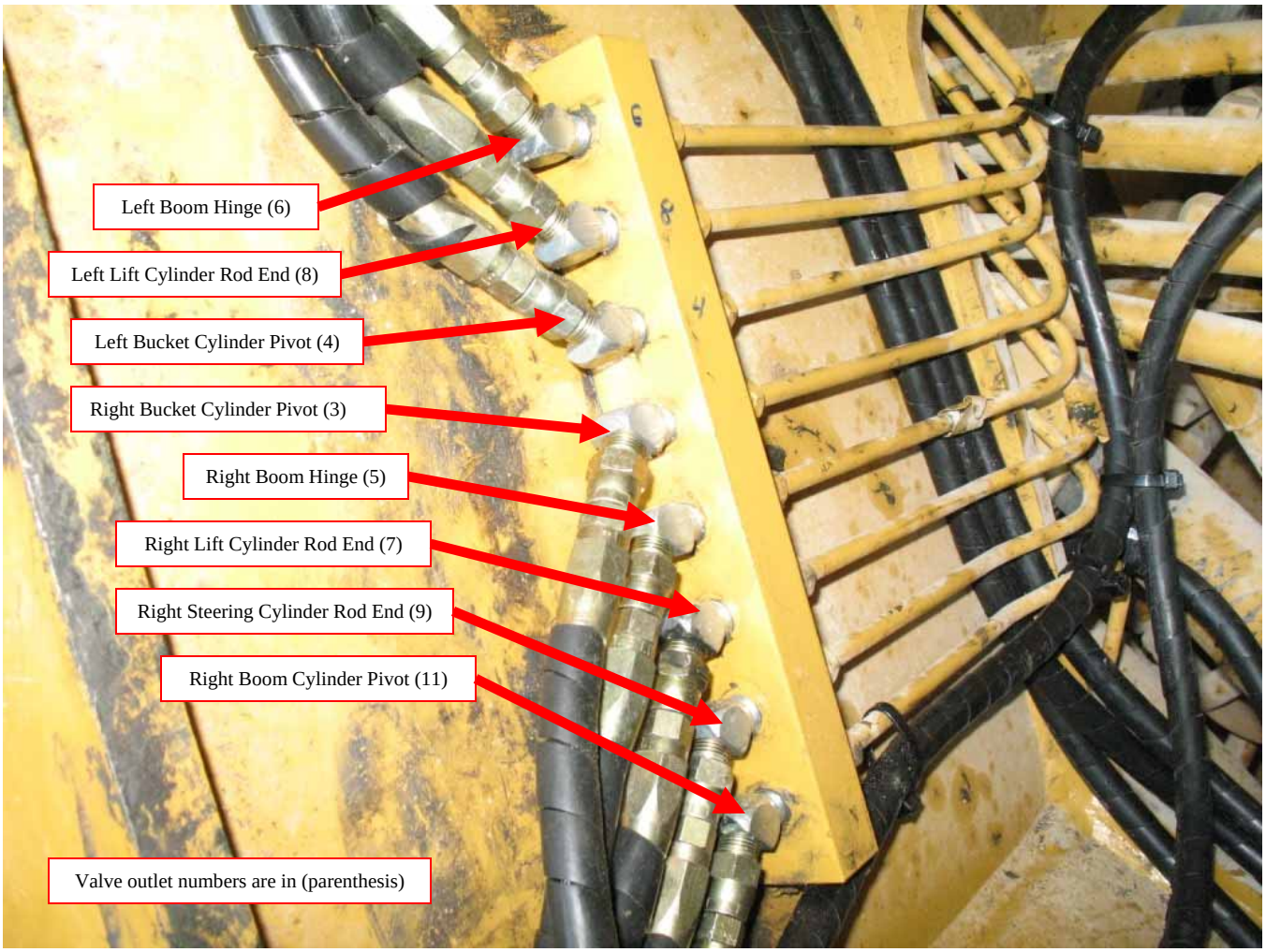


Left Frame Valve Detail



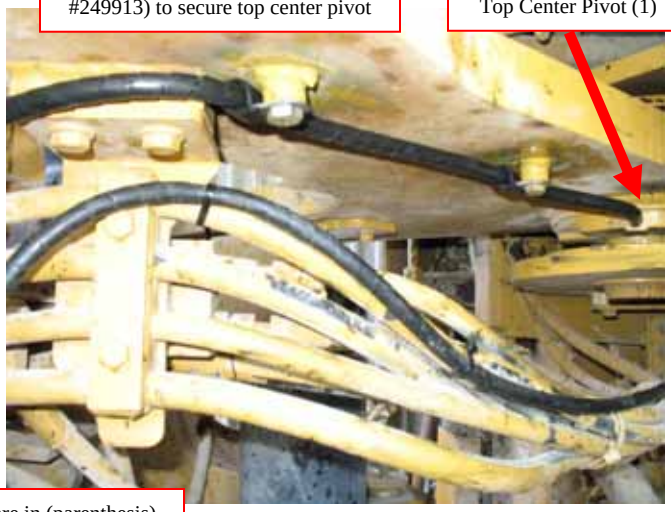




Metering screws are inserted in the EVEN outlet number side. Closure plugs (303-17499-3) are mounted on the opposite or ODD numbered side of the valve.

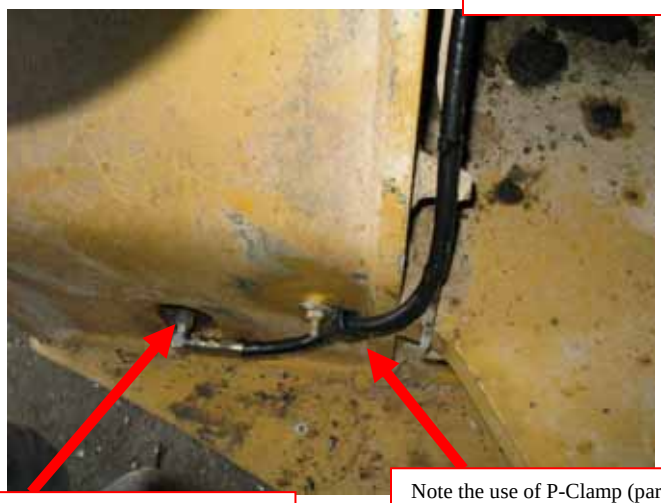

Left Boom Hinge (6)
Left Lift Cylinder Rod End (8)
Left Bucket Cylinder Pivot (4)
Right Bucket Cylinder Pivot (3)
Right Boom Hinge (5)
Right Lift Cylinder Rod End (7)
Right Steering Cylinder Rod End (9)
Right Boom Cylinder Pivot (11)
Valve outlet numbers are in (parenthesis)

Note the use of P-Clamps (part #249913) to secure top center pivot

Top Center Pivot (1)

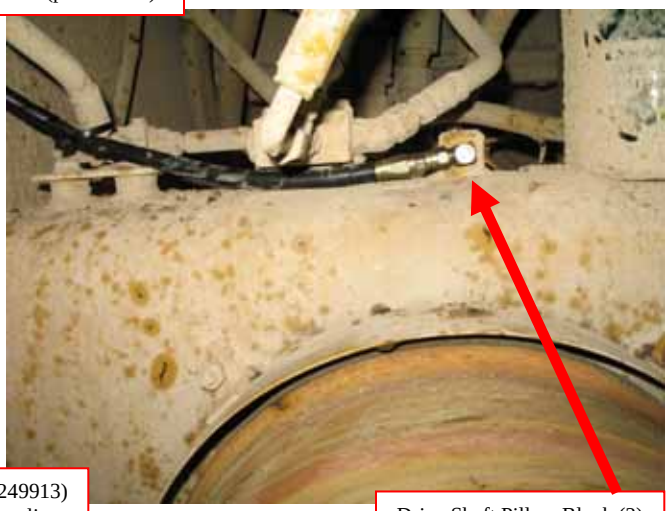


Valve outlet numbers are in (parenthesis)



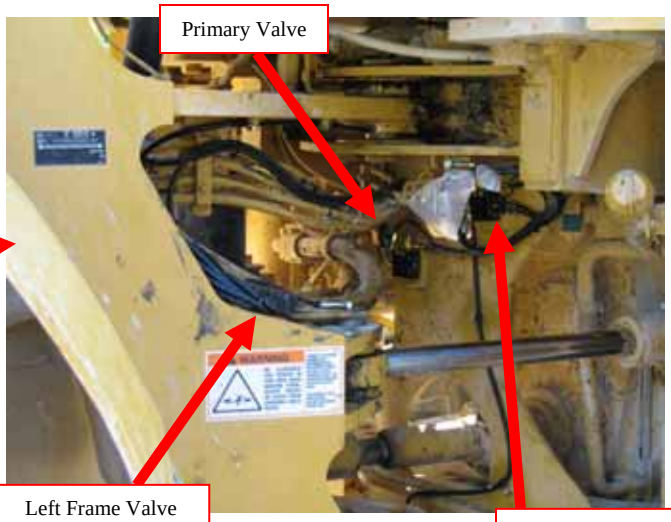
Left Boom Cylinder Pivot (12)

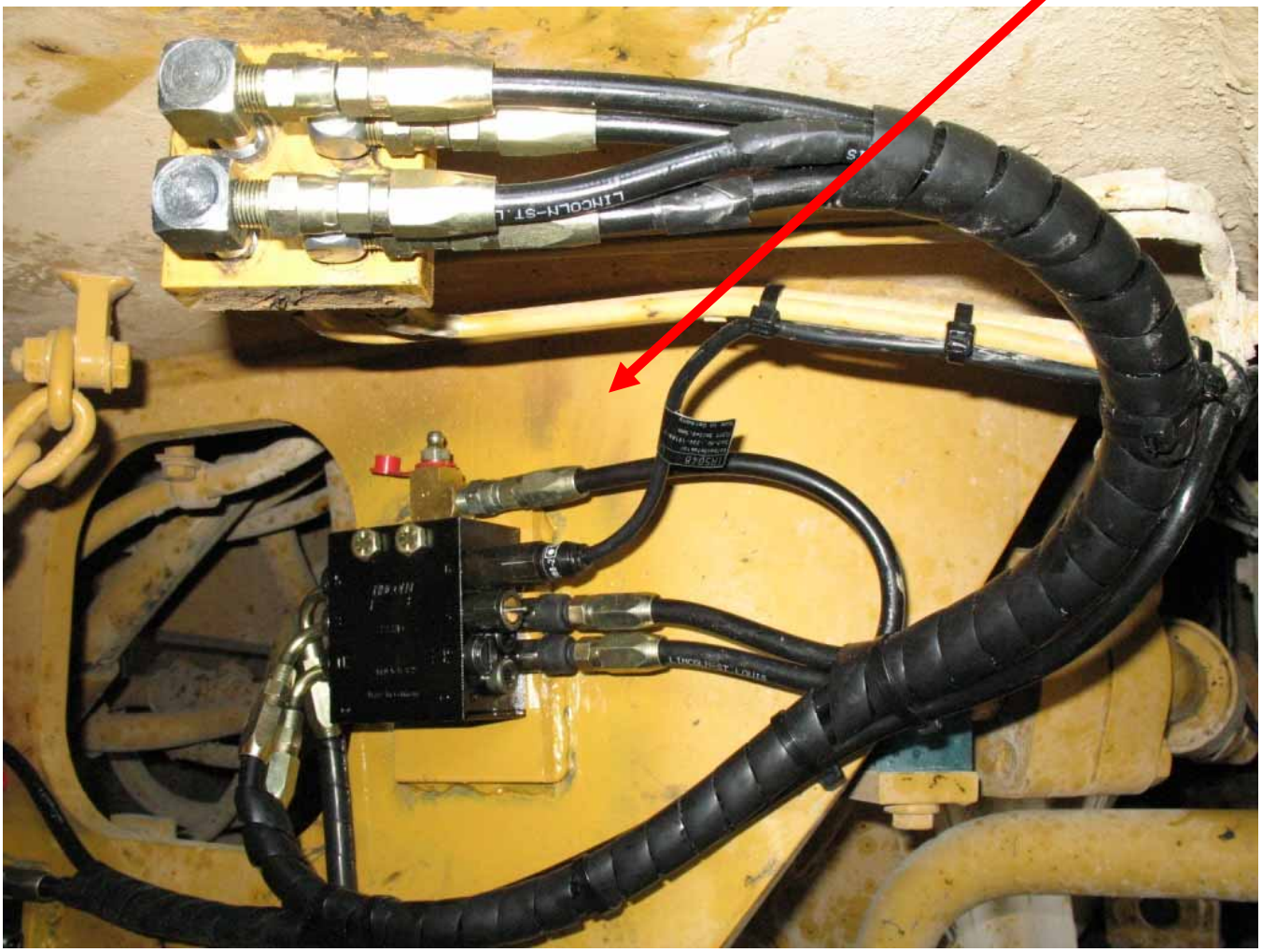
Note the use of P-Clamp (part #249913) to secure left boom cylinder pivot line



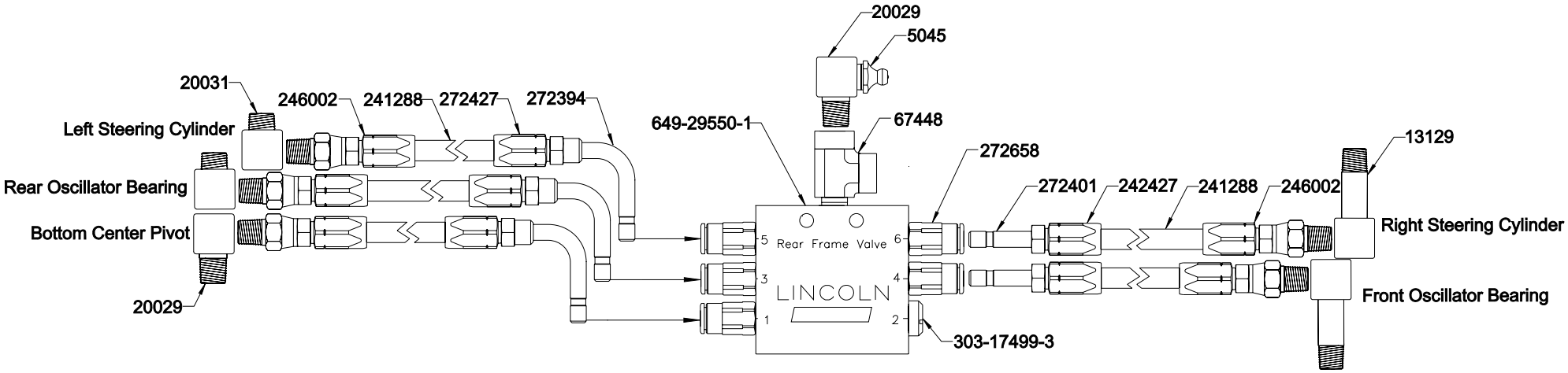
Drive Shaft Pillow Block (2)

Rear Frame Valve

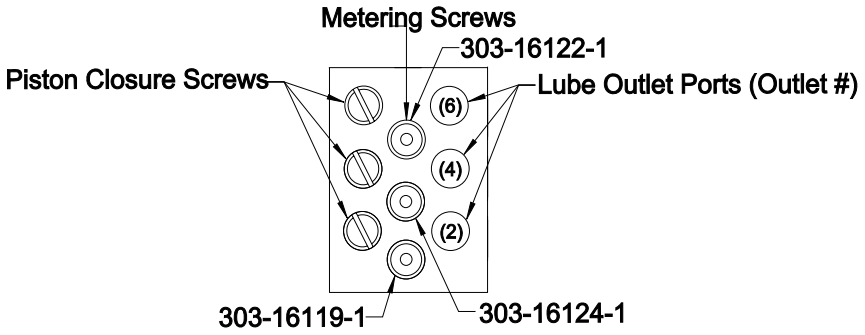


Rear Frame Valve Detail

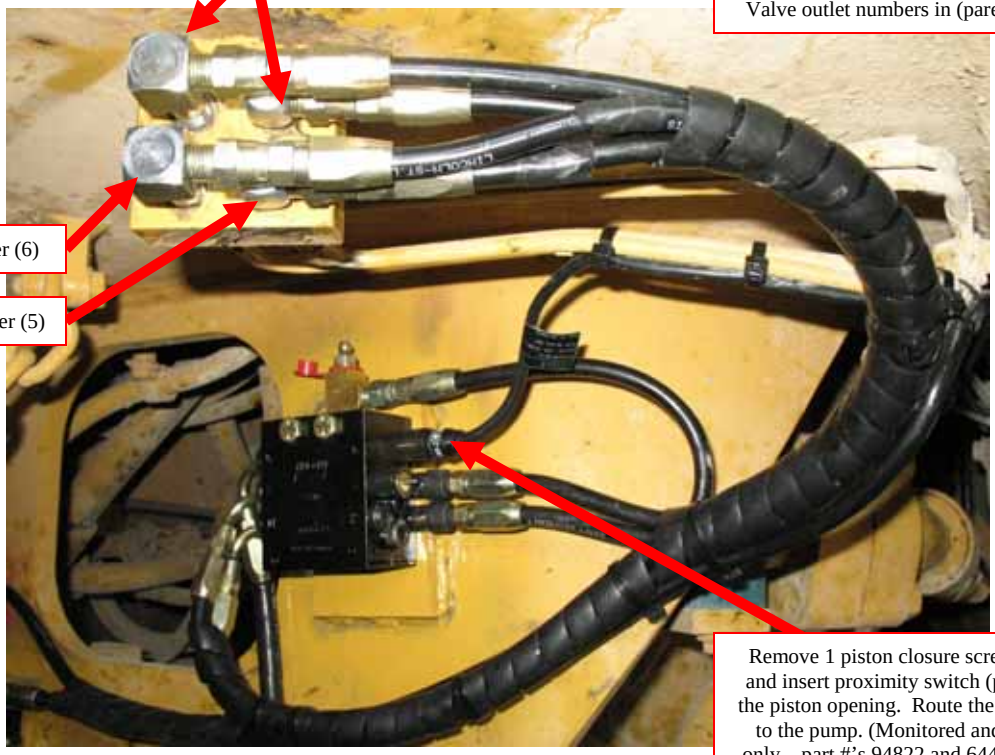



Metering screws are inserted in the EVEN outlet number side. Closure plugs (303-17499-3) are mounted on the opposite or ODD numbered side of the valve.



Front and Rear Oscillator Bearings (3 & 4)

Valve outlet numbers in (parenthesis)



Right Steering Cylinder (6)

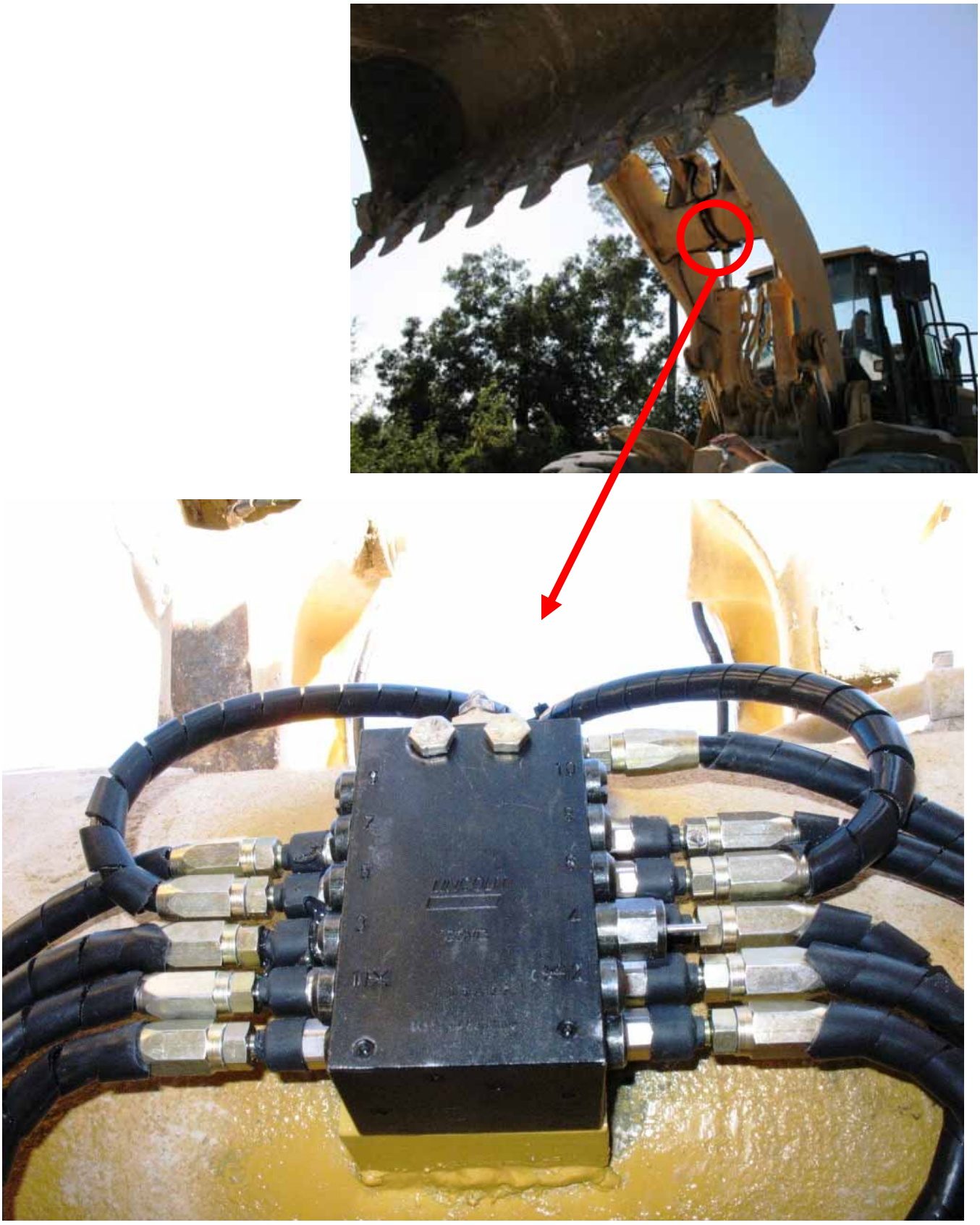
Left Steering Cylinder (5)

Remove 1 piston closure screw from the rear valve and insert proximity switch (part # 234-13188-3) in the piston opening. Route the prox. switch cord back to the pump. (Monitored and Data Logger pumps only – part #'s 94822 and 644-40827-1 respectfully) See pump section of this manual for cycle rate info.

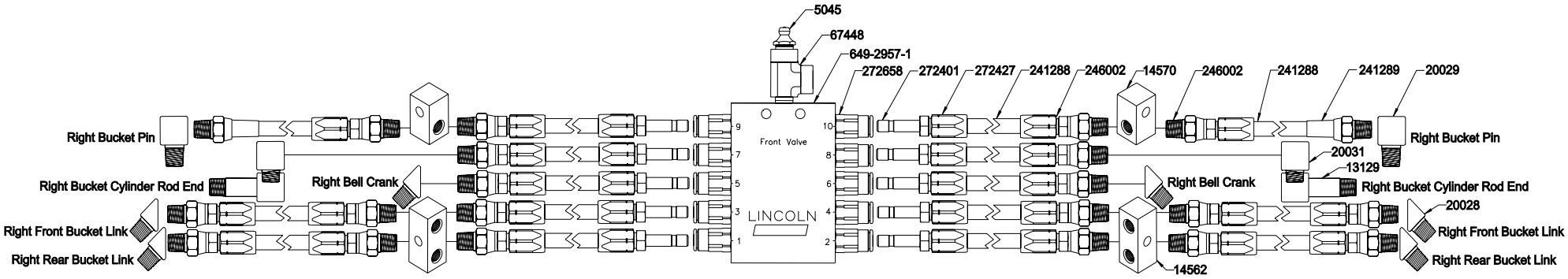
Line routing and P-Clamp (part #249913) location for Bottom Center Pivot

Bottom Center Pivot (1)

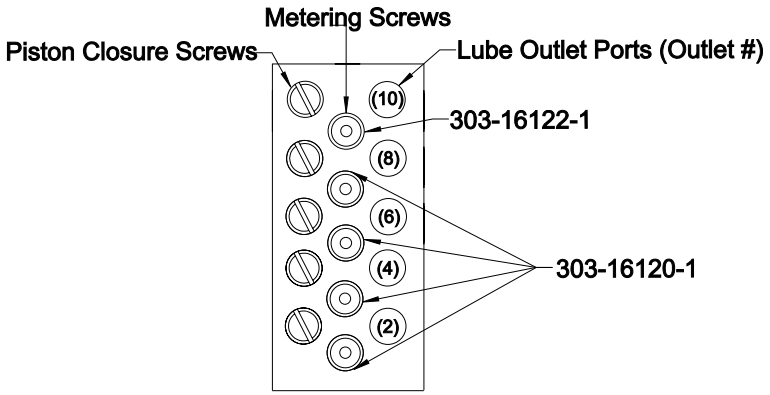
Front Valve



Front Valve Detail

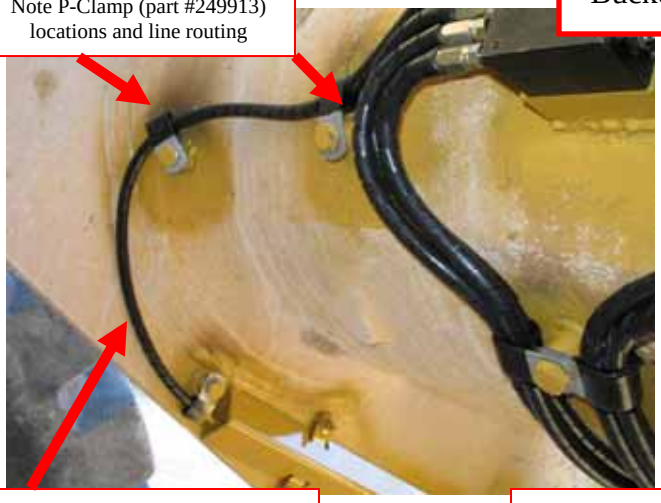



Metering screws are inserted in the EVEN outlet number side. Closure plugs (303-17499-3) are mounted on the opposite or ODD numbered side of the valve.

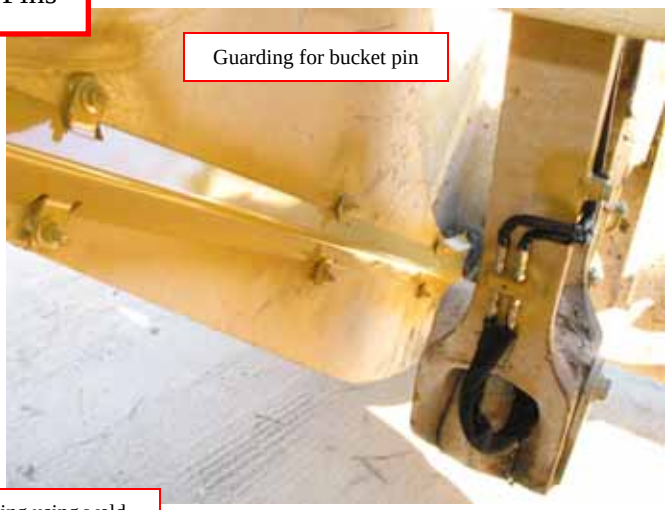


# Bucket Pins

Note P-Clamp (part #249913) locations and line routing

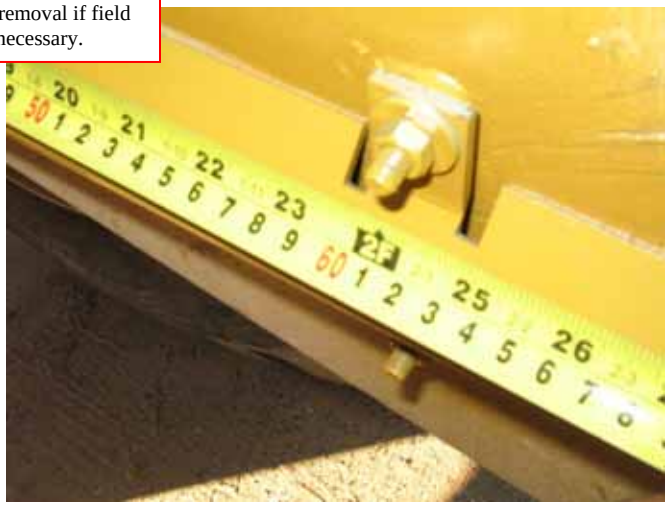


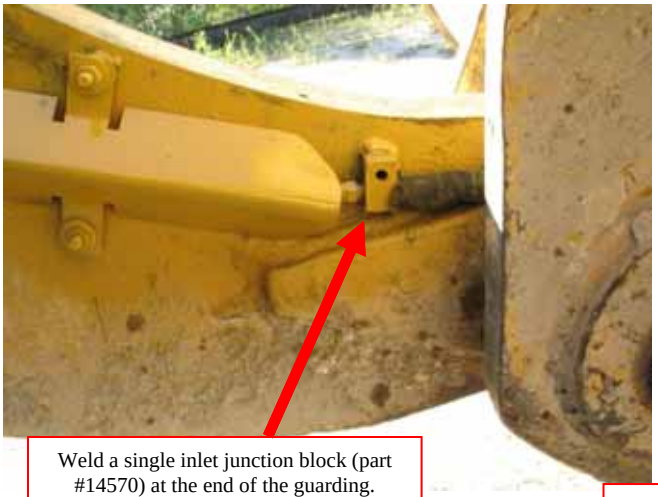
Guarding for bucket pin



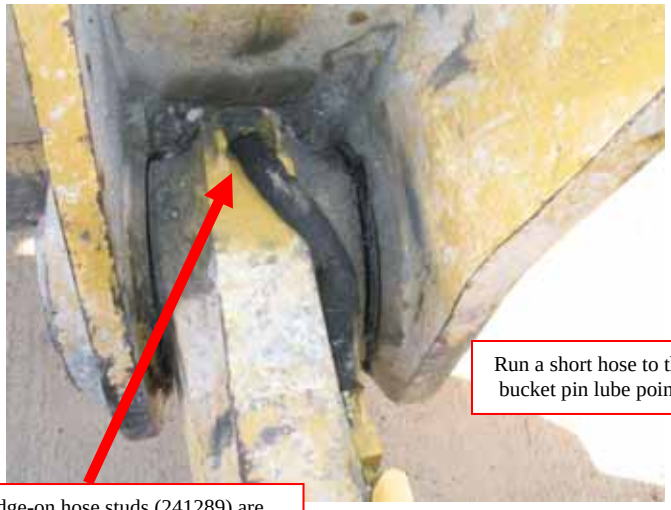
Bucket pin (9 & 10) line routing

Mount the guarding using weld studs for ease of removal if field repairs are necessary.





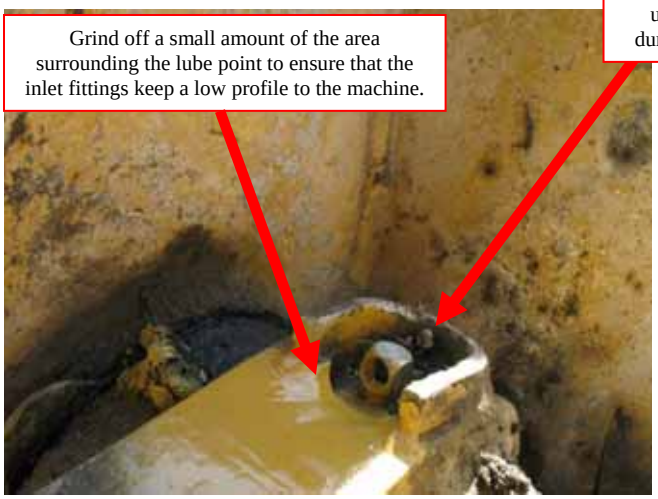
Weld a single inlet junction block (part #14570) at the end of the guarding.



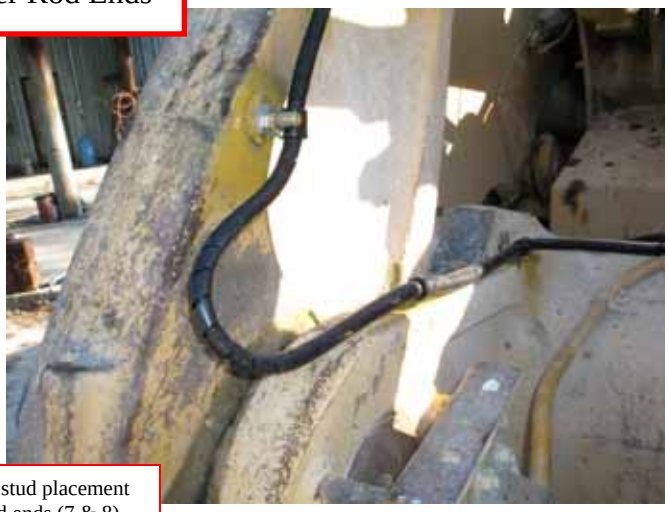
Run a short hose to the bucket pin lube point.

Swedge-on hose studs (241289) are used for the bucket pins for added durability and to ensure a low profile.

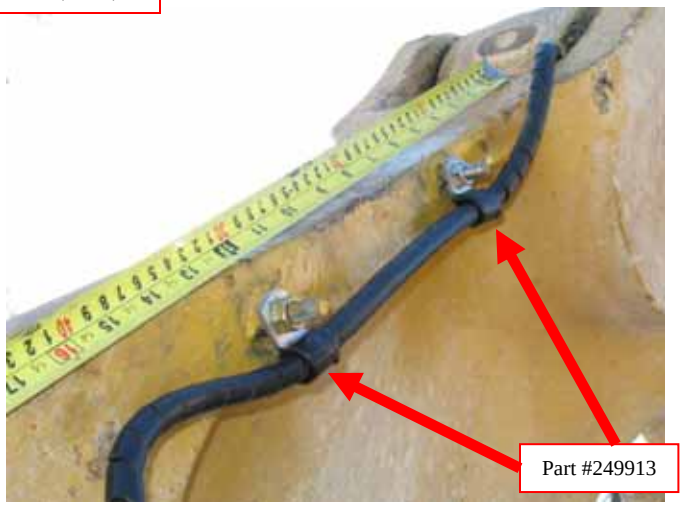
Grind off a small amount of the area surrounding the lube point to ensure that the inlet fittings keep a low profile to the machine.



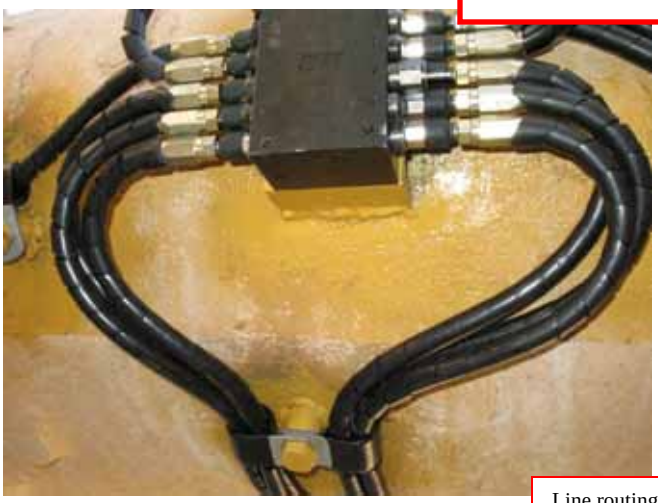
# Bucket Cylinder Rod Ends

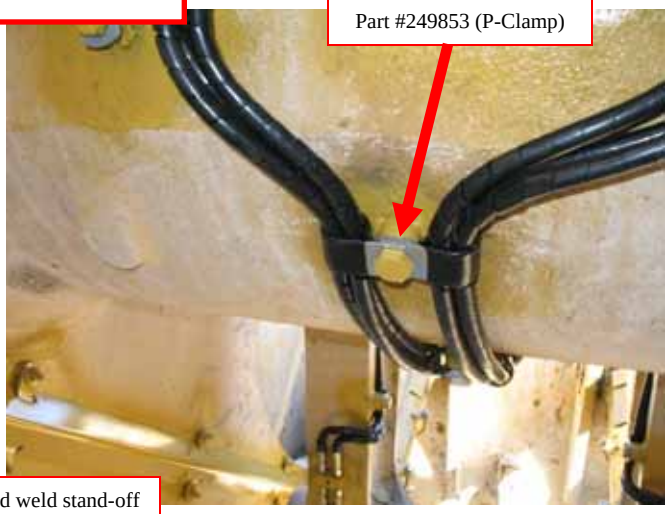


Line routing and weld stud placement for bucket cylinder rod ends (7 & 8).



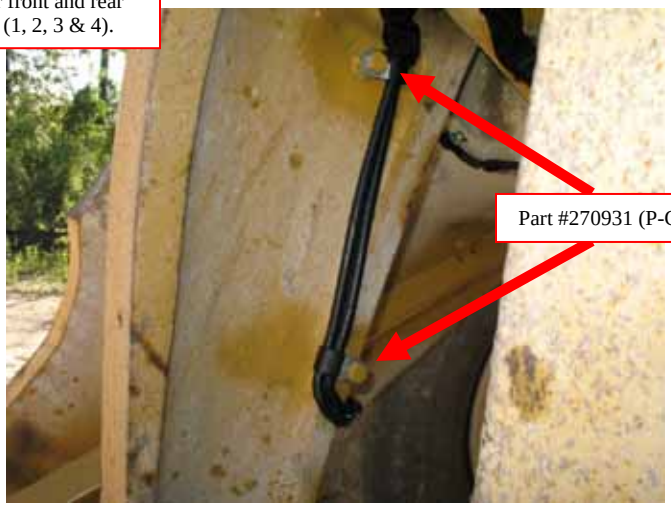
# Front and Rear Bucket Link



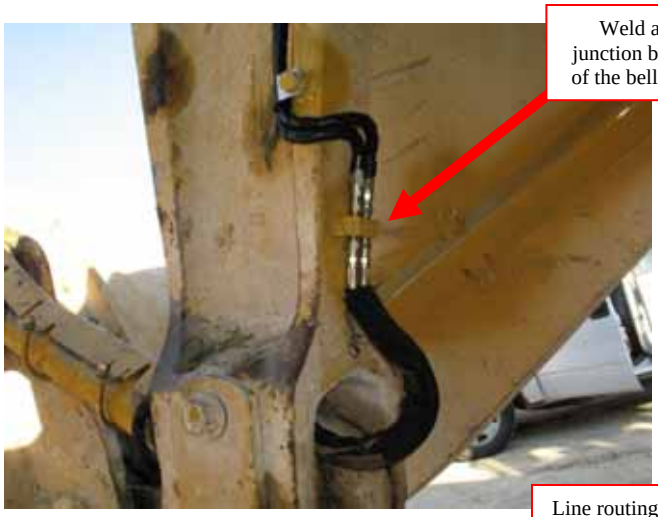


Part #249853 (P-Clamp)

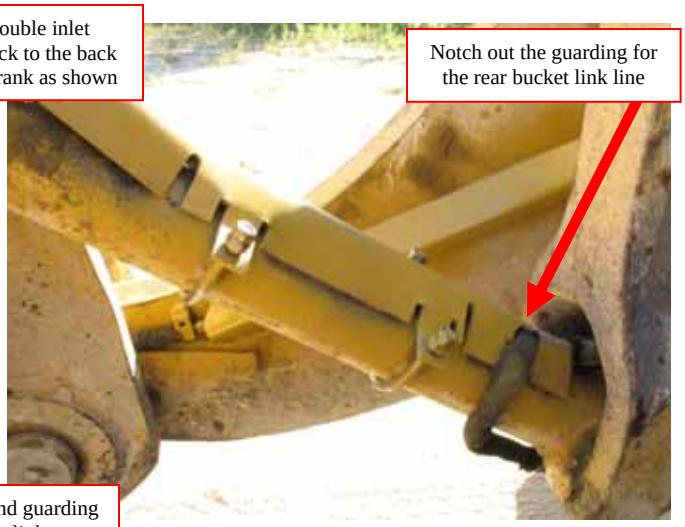
Line routing and weld stand-off placement for front and rear bucket links (1, 2, 3 & 4).



Part #270931 (P-Clamp)



Weld a double inlet junction block to the back of the bell crank as shown



Notch out the guarding for the rear bucket link line

Line routing and guarding for bucket links

# Bell Crank

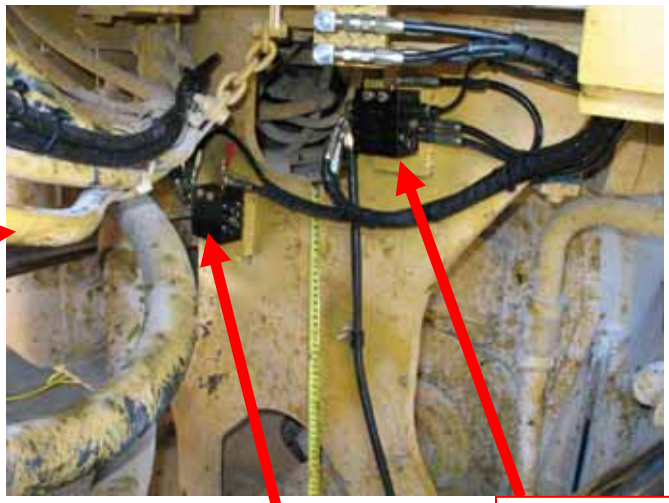
Right bell crank line routing.

Part #249913

Part #249853

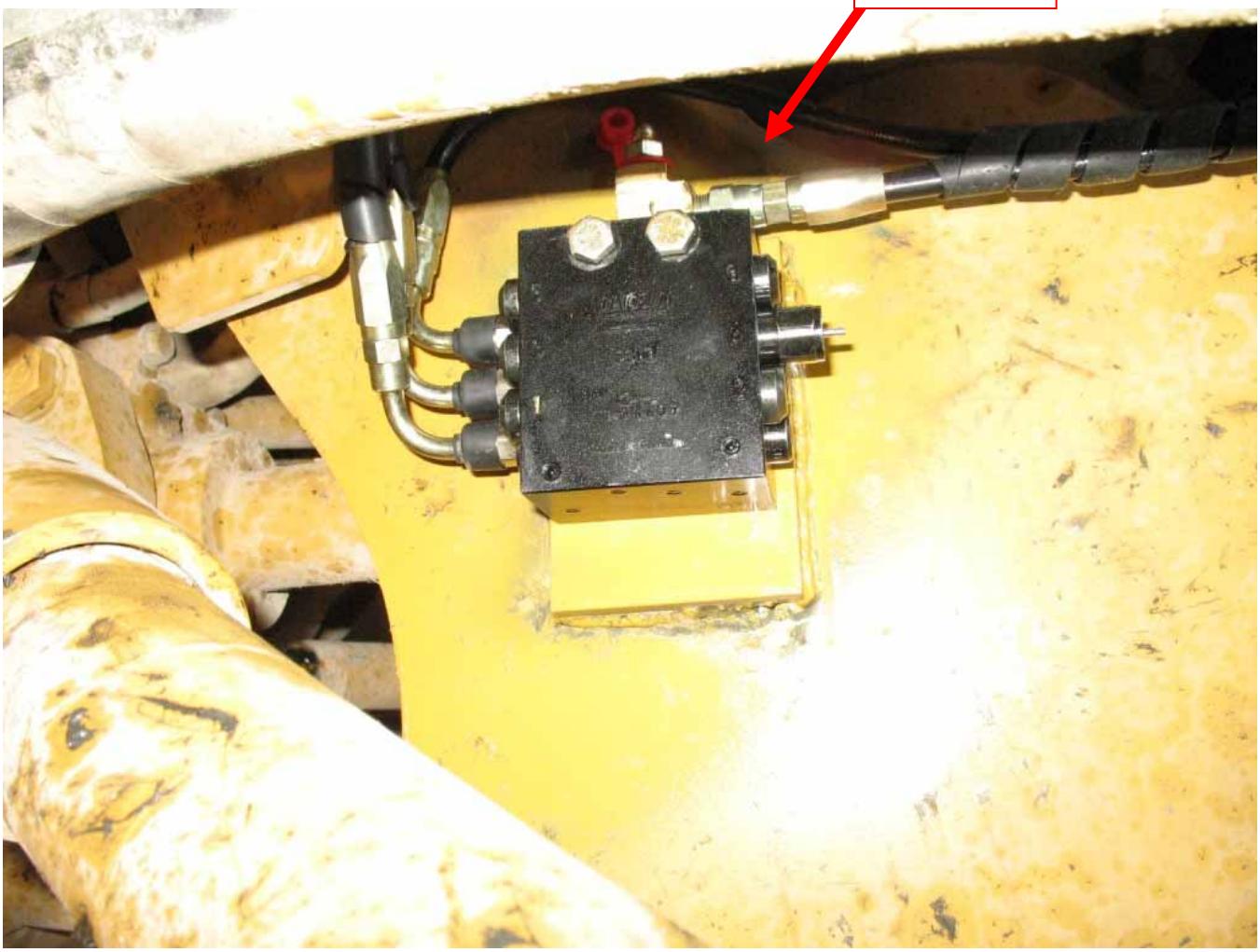
Left bell crank line routing

Primary Valve

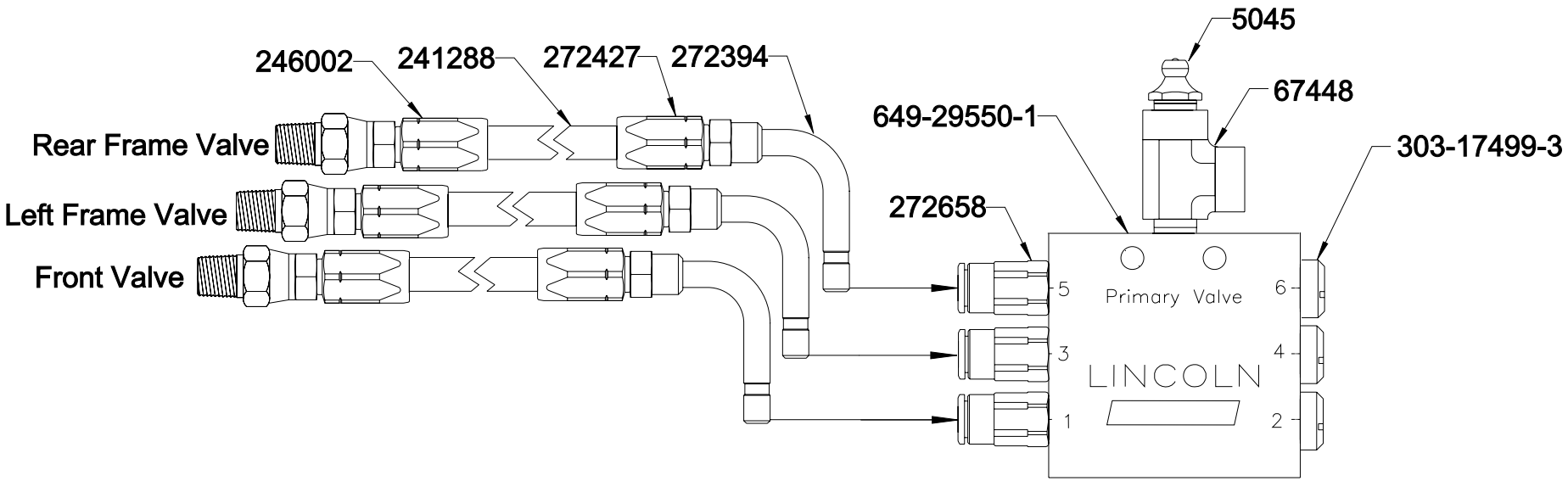


Primary Valve

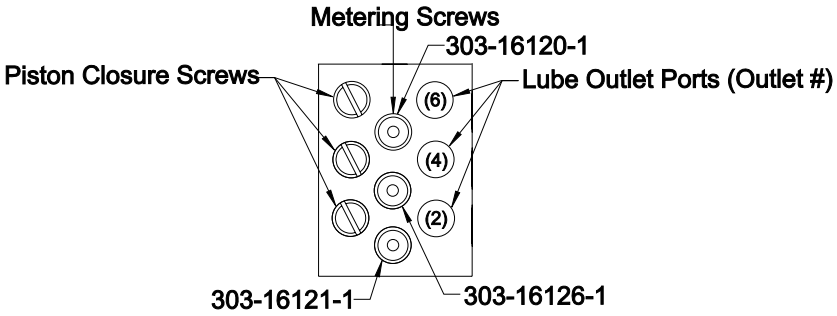
Rear Frame Valve



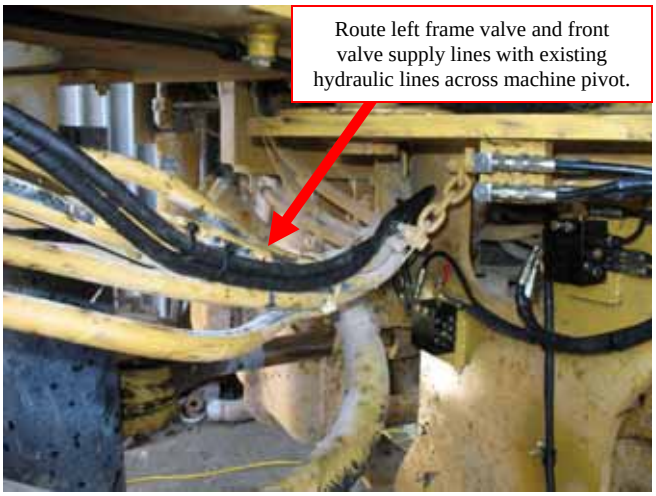
Primary Valve Detail

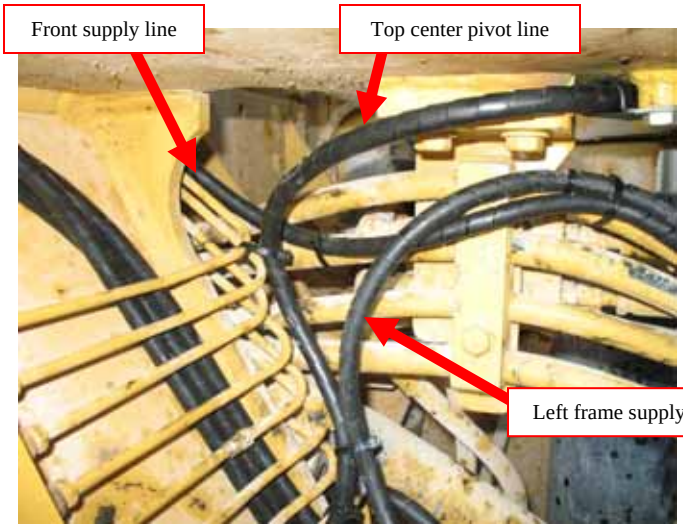



Metering screws are inserted in the EVEN outlet number side. Closure plugs (303-17499-3) are mounted on the opposite or ODD numbered side of the valve.



## Supply Line Routing from Primary Valve



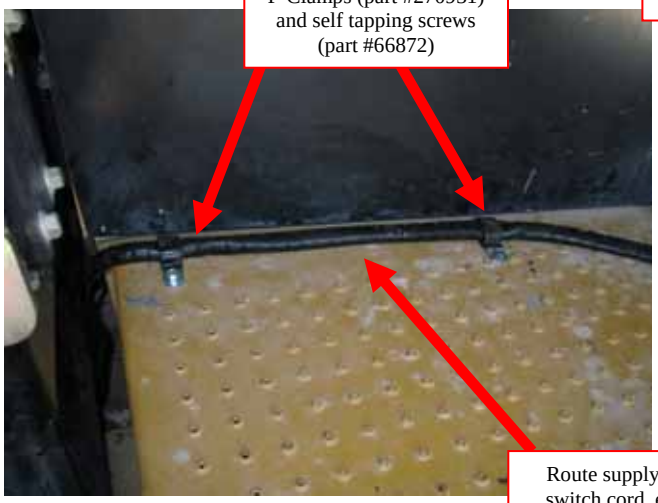



Front supply line routing

Pump

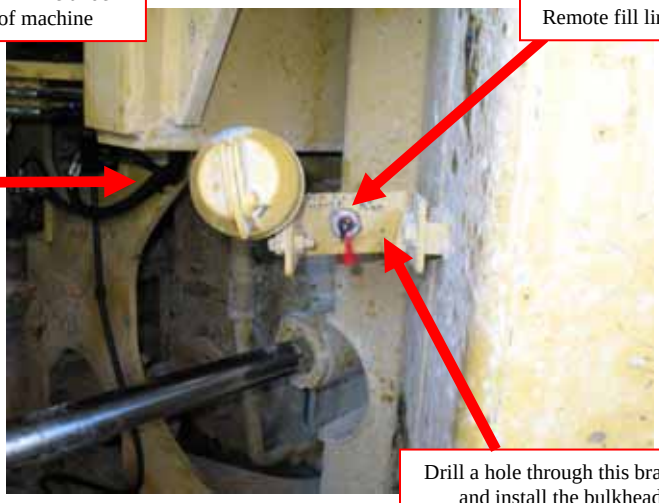
Pump Location

P-Clamps (part #270931) and self tapping screws (part #66872)



Route supply line, proximity switch cord, electrical power cord, and remote fill line under cab to middle of machine

Remote fill line



Drill a hole through this bracket and install the bulkhead connector with grease fitting (part #'s 14054, 51055, & 5527)

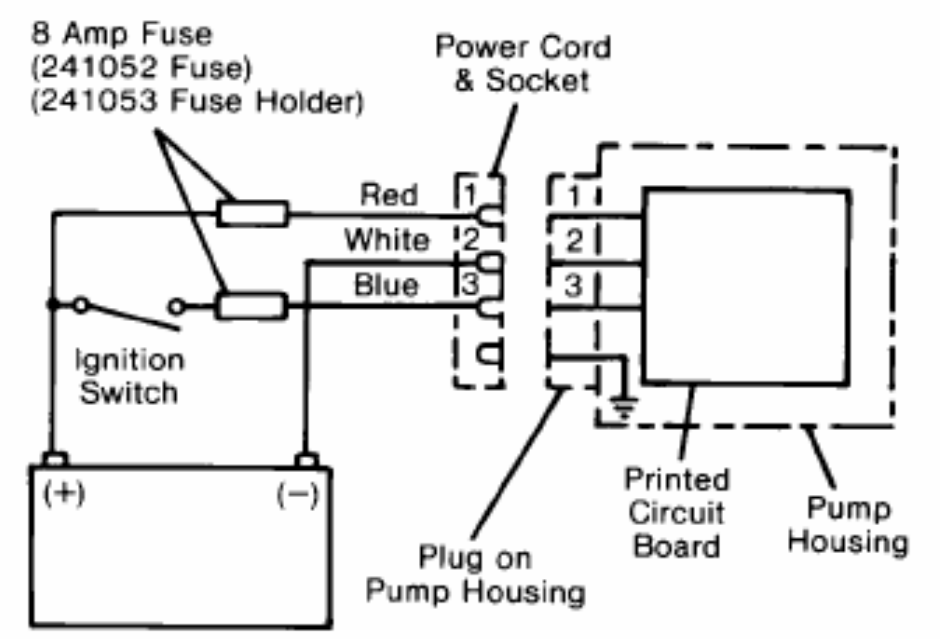
Install the pushbutton on the face of the dashboard (monitored and data logger pumps only)

The cycle rate of the rear valve (location of proximity switch) is approximately 18 minutes. It is recommended that the on time be set for 18 minutes (red dial set to 9) on non-monitored pumps. The off time should be adjusted based on the operating conditions of the wheel loader.

## ELECTRICAL CONNECTIONS (Non-Monitored Pump)

Connect black power cord as follows:

Red wire connects to 8amp fuse then to battery (+) hot.
White wire connects to battery (-) ground.
Blue wire connects to 8 amp fuse, to ignition switch, then to battery (+) switched.




## TIMER OPERATION

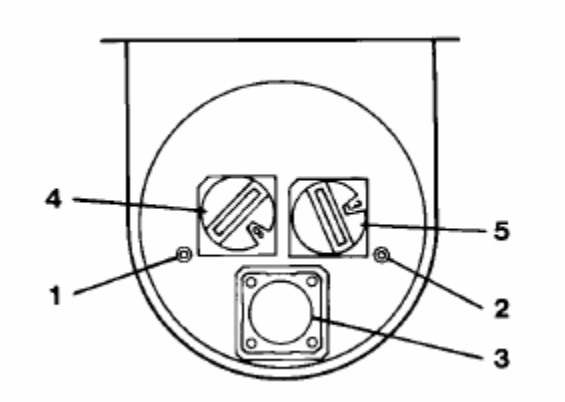
The off timer begins accumulating time when the ignition switch closes. When the off timer reaches the preset value the pump will turn on. The pump remains activated for the period of time that is preset on the ON timer.

Remove Sealing Plug on front of pump to access manual lube switch, timer adjustments or to view the system LED's.

When switching off the ignition voltage and/or the operating voltage the time already used is saved for an unlimited duration.

When the power supply is switched on again the printed circuit board continues to operate from the point where it had been interrupted.

## Timer Setting (Non-Monitored Pump)




1. The LED marked “battery” lights when power is applied to the PC board.
2. The LED marked “motor” lights when pumping lubricant.
3. Depressing pushbutton for **2 seconds** will initiate a manual lube event.
4. Off timer rotary switch, can be adjusted to 15 values, (do not set to “0” )
5. On time rotary switch, can be adjusted to 15 values, (do not use “0” )

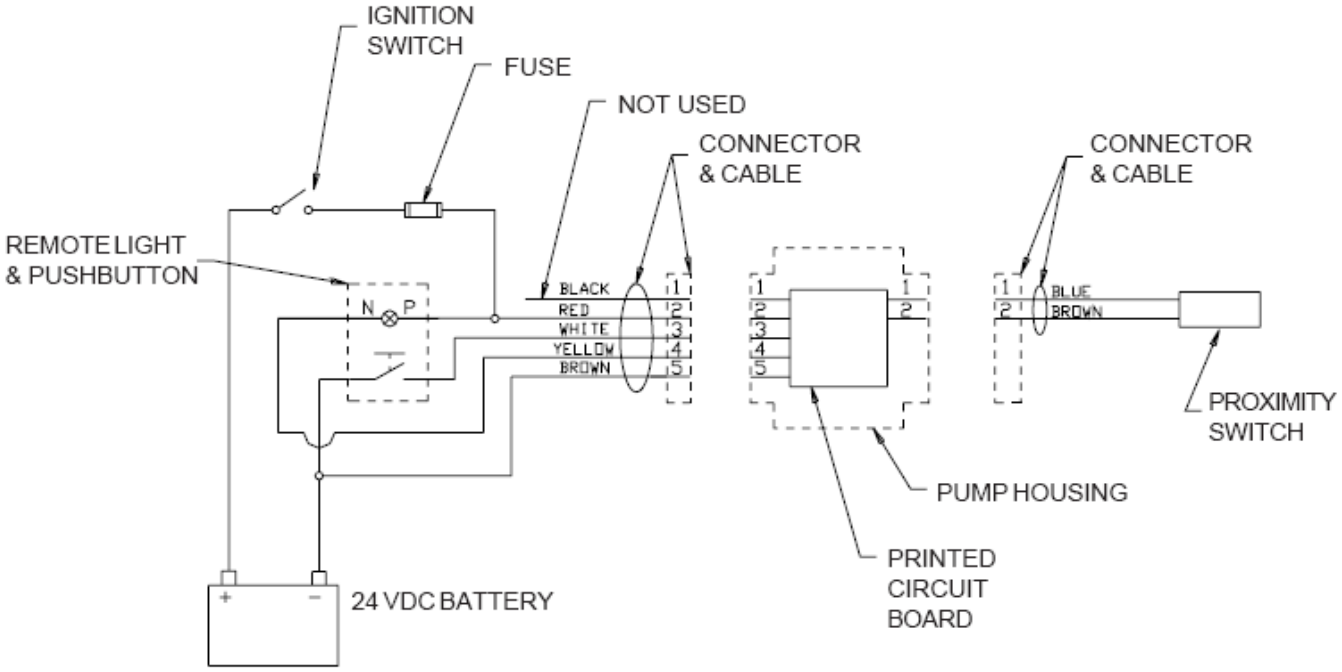
**IMPORTANT: Do not use the zero position located on the ON or Off timer switch.**

| OFF-TIME Rotary Switch Setting | Interval Between Cycles | ON-TIME Rotary Switch Setting | Pump Will Run For: |
|---|---|---|---|
| 0 | Will not run | 0 | Will not run |
| 1 | 1 hours | 1 | 2 minutes |
| 2 | 2 hours | 2 | 4 minutes |
| 3 | 3 hours | 3 | 6 minutes |
| 4 | 4 hours | 4 | 8 minutes |
| 5 | 5 hours | 5 | 10 minutes |
| 6 | 6 hours | 6 | 12 minutes |
| 7 | 7 hours | 7 | 14 minutes |
| 8 | 8 hours | 8 | 16 minutes |
| 9 | 9 hours | 9 | 18 minutes |
| A | 10 hours | A | 20 minutes |
| B | 11 hours | B | 22 minutes |
| C | 12 hours | C | 24 minutes |
| D | 13 hours | D | 26 minutes |
| E | 14 hours | E | 28 minutes |
| F | 15 hours | F | 30 minutes |

**Recommended setting**

## ELECTRICAL CONNECTIONS (Monitored Pump)

Connect black power cord as follows:
Red wire connects to 8amp fuse then to battery (+) switched, and to “P” terminal on pushbutton.
Brown wire connects to battery (-) ground.
White wire connects to switch terminal on pushbutton (opposite terminal connects to battery (-) ground).
Yellow wire connects to “N” terminal on pushbutton.




IMPORTANT
POLARITY ON REMOTE LIGHT MUST BE OBSERVED.
"P" LOCATED ON BACK OF LIGHT GOES TO RED WIRE.
"N" LOCATED ON BACK OF LIGHT GOES TO YELLOW WIRE.

SYSTEM ACCESSORIES

| DESCRIPTION | PART NO. |
|---|---|
| PUSHBUTTON & LIGHT (24 VDC) | 241484 |
| 8 AMP FUSE | 241052 |
| FUSE HOLDER | 241053 |

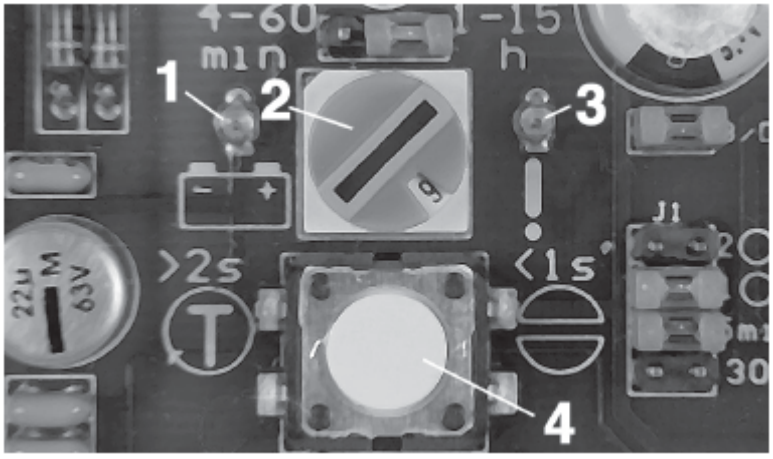
## TIMER OPERATION

The off timer begins accumulating time when the ignition switch closes. When the off timer reaches the preset value the pump will turn on. The pump remains activated for 1 cycle of the Boom Secondary Valve (location of the proximity switch).

Plug on the front of pump is to access timer adjustments or to view the system LED’s.

When switching off the ignition voltage and/or the operating voltage the time already used is saved for an unlimited duration. When the power supply is switched on again the printed circuit board continues to operate from the point where it had been interrupted.

## Timer Operation (Monitored Pump)




1. The LED lights when power is applied to the PC board.
2. Off timer rotary switch, can be adjusted to 15 values, (do not set to “0”)
3. The LED lights when pumping lubricant.
4. Depressing pushbutton for **2 seconds** will initiate a manual lube event.

**IMPORTANT: Do not use the zero position located on the ON or Off timer switch.**

| Switch position | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minutes | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 |

Note Factory Timer Settings: Off-Time Switch Setting = 6 (24 min.)

## System Start-up

The following checklist has been developed as an aid in verifying proper installation and operation of the Quicklub Onboard Grease System. By completing the steps outlined below, the operational readiness of the system and resulting extension of the component life of all points connected to the system will be insured.

- Apply grease gun (manual or pneumatic) to the grease fitting located on the Primary valve and each secondary valve inlet. While pumping grease through the system, cycle the indicator pin on the primary metering valve a minimum of 15 times. NOTE: Grease gun nozzle and grease fitting should be thoroughly cleaned before lubricating to prevent flow of contaminants into the lube system.
- Inspect primary valve supply and outlets for grease discharge. If leakage is detected, tighten the fittings.
- Continue to cycle the system until fresh grease appears at each lube point.
- Inspect each lube point fitting for leaks. Correct any leaks by firmly pushing tube into the fitting until seating occurs, or tighten the threaded fittings for components connected with hose.
- Operate the equipment through its complete range of motion, inspecting for unrestricted movement of tube and hose. Correct any problems of rubbing, chaffing or kinking.
- Inspect all hose and tube that is not covered with some type of protective wrap. Wrap any tube or hose that would be susceptible to damage from rubbing or chaffing.
- Inspect all hose and tube connected to moving components. Insure that adequate hose or tube is provided to allow unrestricted movement to these moving lube points.
- Verify proper pump operation and verify time setting by activating pump with the green activation button located on the face of the pump control panel. Activate the pump at least three times to insure proper operation.
- After the truck is in operation for a period of time (approx. 80 hours), you may find you need to adjust timing to a shorter or longer period based on the operating conditions.
- Fill the reservoir with selected grease by filling at the grease fitting located on the face of the pump reservoir.

## Daily Walk-Around Inspection

The Lincoln Industrial Quicklub automated lube system components are designed, engineered, manufactured and assembled to the highest or quality standards. This lube system requires little or nor maintenance, however, to ensure maximum reliability and to realize maximum service life of all components, it is highly recommended that a **daily walk-around inspection** be performed.

The daily walk-around inspection should include the following:

- Observe lubricant level in reservoir. Fill reservoir if it is low.
- Inspect high pressure relief at pump element, noting any lubricant buildup. If buildup is observed, correct this problem by determining cause of blockage.
- Inspect all valve and lube point connections to verify that no leaks are occurring.
- Inspect supply/feed lines to insure that no breaks or leaks have occurred.
- Inspect lube points to ensure that all lube points have a **"fresh grease appearance."**
- Check pump operation by depressing push-button located in base of pump for two seconds to initiate a manual lube event. This will verify that pump is working (ignition switch must be on).
- Report or repair any problems found in this walk-around inspection immediately.

**NOTE:** Operator to confirm operation of electric pump while machine is in service.

**NOTE:** Report or repair any problem detected from daily inspection.

## Troubleshooting

### Locating Blockage in Lincoln Quicklub® Systems

**Description**
In a Lincoln Quicklub® Lubrication System, free flow of lubricant from the pump through the transmission system and the bearings is necessary. If any portion of this transmission system (a divider valve, line fitting or any bearing) does not freely accept and pass its portion of the lubricant a blockage has occurred. This blockage will cause a higher than normal pumping pressure to be developed by the pump. Depending on the application or system design, this blockage with its resultant high pump pressure will usually cause a complete loss of lubricant flow into the total system and no bearing will be receiving lubricant. The loss of flow due to a blockage is first indicated with the higher than normal system pressure that is developed by the pump as it attempts to overcome this blockage.

This abnormally higher pressure that is a result of a blockage is limited, isolated, and signaled through the use of various performance indicators, reset and relief, incorporated into the system design.

**Divider Valve**
A Quicklub® divider valve is a proportioning device consisting of a minimum of three pistons. A primary divider valve is the first divider valve downstream from the lube pump. A secondary divider valve is any divider valve receiving lubricant from the primary divider valve.

**Outlets**
Each outlet on a Quicklub® divider valve dispenses .012 $in^3$ per cycle. If an outlet is plugged, the lubricant will be diverted to the next outlet down allowing proper proportioning of lubricant to all lubrication points.

**Warning —** Never block lube outlets numbered one and two.

**Locating Blockage**
If a blockage exists in a Quicklub lubrication system it is caused by one of the following reasons:
(1) Crushed transmission line in the System.
(2) Blocked bearing in the system.
(3) Improperly drilled fitting in the system.
(4) Blocked divider valve in the system.

All servicing and disassembling should be carried out under the cleanest conditions possible. A blockage in a Quicklub system will be indicated by the fault light and by the pump element relief indicator, exhausting lubricant to atmosphere. Before proceeding as outlined, make a visual inspection of the system and check for crushed lines or improper divider valve installation. Verify that each divider valve outlet required to discharge lubricant can do so and that no plugs have been installed in an outlets one and two of any valve.

**Use Filtered Lubricant Only.**

**Note:** Dirt and foreign material are the worst enemies of any lubricating system.

**Procedure**

1. Use a manual pump with a gauge. Fill the pump with clean, filtered lubricant common to the system. Connect the manual pump into the inlet of the primary divider valve and slowly operate pump. If system will not cycle freely below 1,500 PSI, see Step 2.

2. With pressure on the primary as outlined in step 1, remove one at a time each supply line (if the supply lines cannot be removed, remove outlet fittings starting from the bottom and working towards the valve inlet) and attempt to operate manual pump after each line is removed. Do not exceed 2,000 PSI. If pressure drops and primary cycles freely after a line is removed then blockage is downstream in the area that is being served from that outlet. See Step 3. If all feed lines are removed and primary will not cycle, blockage is in this divider valve. Note: When a feed line of a blocked area is removed a small shot of trapped lubricant will usually surge out of this outlet as the inlet pressure on the divider valve drops. If testing in Step 2 indicates a blockage in the primary divider valve, this divider valve must be replaced.

3. Testing accomplished in Step 2 has indicated the blockage is downstream of the primary divider valve. Reinstall the feed line into the primary valve and proceed to downstream secondary divider valve and repeat step 2 on the secondary valve. If lubricant can be discharged freely through the secondary valve, the blockage is in the supply line between the primary and the secondary valve.

4. If high pressure exists on one of the secondary outlets, blockage has been located. Look for crushed line, tight bearing, improperly drilled fittings and/or lube inlet port. Correct as necessary.

**Contamination**

If dirt, foreign material or any other form of contamination is found as the source of the blockage, clearing the blockage will only temporarily solve contamination blockage problems. The **source of the contamination must be eliminated for satisfactory service.** The reservoir must be inspected and cleaned if necessary. The reservoir filling method should be reviewed to eliminate any chance of foreign material entering the reservoir during filling. All lubricating systems require filtered lubricant.

**Grease Separation Blockage**

If a hard wax or soap like material is found in the valve outlets, grease separation is occurring. This means that the oil is being squeezed from the grease at normal system operating pressure and the grease thickener is being deposited in the divider valve. Cleaning the divider valve will usually result in only temporarily solving the problem. Consult your lubricant supplier for recommendations on alternate lubricants and your local Lincoln Distributor to verify compatibility with centralized lubricating systems

## TROUBLE SHOOTING GUIDE:

| SYMPTOM | PROBABLE CAUSE | SOLUTION |
|---|---|---|
| 1. Pump will not operate. | Not receiving voltage. | Check fuses, timer and electrical supply.<br>Check the electrical supply to the pump.<br>If the pump receives no current, trace to the electrical source and repair. |
| | Blocked pump cam. | Replace the pump motor if no blockage is identified. |
| 2. The pump motor is running but there is no grease being discharged. | Air pocket at pump element inlet. | Disconnect the main delivery hose from the pump outlet.<br>Run the pump until solid grease (no bubbles) flows from the outlet. If solid grease does not discharge after 20 minutes of operation, the pump inlet is blocked with a contaminant.<br>**NOTE:** Depending on operating temperatures and types of grease, it may require 10 minutes to achieve full volume at the outlet. |
| | Blocked Pump inlet. | Remove the pump element from the pump body and inspect the suction inlet port for foreign particles. Remove any particles found.<br>Reassemble the pump and element and cycle the pump. If the pump element does not discharge grease, replace the pump element. |
| 3. Pump was operated with an empty reservoir. | No grease | Fill the reservoir to the "max" level and press the manual reset button.<br>Disconnect the main delivery hose from the pump and watch grease flow until solid grease (no air bubbles) is discharged.<br>Reconnect the main delivery hose to the pump outlet. |
| 4. Grease is discharged at the relief valve. | Blockage in the metering valves, hose, tube or connected component. | Switch the pump on and loosen each outlet in the primary valve one at a time. The blocked outlet will start discharging grease and the indicator pin will index.<br>Retighten all of the outlets on the primary valve.<br>Trace the hose that discharged grease to its secondary valve.<br>Repeat the process of loosening each outlet one at a time until the blocked feed line is detected.<br>Retighten all outlets.<br>Repair the component blockage if found.<br>If a metering valve is creating the blockage, replace the metering valve. |
| 5. Indicator pin on the primary valve does not move. | Refer to #4. | Refer to #4. |
| 6. Lube point not receiving grease. | Hose or tubing is cut or has chaffed through. | Replace the complete hose or tube. Or:<br>If Tube is broken, cut tube at break and repair using tube union (part number 244058).<br>If Hose is broken, cut ends at the break and install new reusable hose ends (part number 246002) and screw into a 1/8" NPT female connector (part number 67063). |

## SSV-D Metering Adjustment Screw Outputs and Identification

| Part Number | Output per Stroke | Marking |
|---|---|---|
| 303-16118-1 | 0.0049 $in^3$ (0.08 $cm^3$) | 08 |
| 303-16119-1 | 0.0085 $in^3$ (0.14 $cm^3$) | 14 |
| 303-16120-1 | 0.012 $in^3$ (0.2 $cm^3$) | 20 |
| 303-16121-1 | 0.018 $in^3$ (0.3 $cm^3$) | 30 |
| 303-16122-1 | 0.024 $in^3$ (0.4 $cm^3$) | 40 |
| 303-16123-1 | 0.037 $in^3$ (0.6 $cm^3$) | 60 |
| 303-16124-1 | 0.049 $in^3$ (0.8 $cm^3$) | 80 |
| 303-16125-1 | 0.061 $in^3$ (1.0 $cm^3$) | 100 |
| 303-16126-1 | 0.085 $in^3$ (1.4 $cm^3$) | 140 |
| 303-16127-1 | 0.110 $in^3$ (1.8 $cm^3$) | 180 |

If your machine requires additional lubricant to an individual bearing, replace the metering adjustment screw with a higher output screw. If the lubrication system is supplying excessive lubrication to an individual bearing, replace the metering adjustment screw with a lower output screw. The design provided in this manual is a general guideline and can easily be altered by changing the metering adjustment screws based on individual machine operating conditions.